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OFFICIAL REPORT

OF THE

Twenty-Sixth Fruit-Growers' Convention

OF THE

STATE OF CALIFORNIA

1901

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OFFICIAL REPORT

OF THE

Twenty-Sixth Fruit-Growers' Convention

OF THE

STATE OF CALIFORNIA.

Held under the Auspices of the State Board of Horticulture, at
San Francisco, commencing Tuesday, December 3, and
ending Friday, December 6, 1901.

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TRANSACTIONS

OF THE

TWENTY-SIXTH FRUIT-GROWERS' CONVENTION

HELD UNDER THE AUSPICES OF THE CALIFORNIA STATE BOARD OF HORTICULTURE, AT PIONEER HALL, SAN FRANCISCO, DECEMBER 3 TO 6, 1901.

Pursuant to call, a convention of fruit-growers, shippers, nurserymen, and others interested in horticulture and kindred pursuits in California, assembled in convention in Pioneer Hall, San Francisco.

OPENING EXERCISES.

President Ellwood Cooper, of the State Board of Horticulture, called the Convention to order and explained the object of the meeting.

Rev. George Allen, of San Francisco, opened the proceedings with prayer.

Prof. E. J. Wickson, of the University of California, was chosen Vice-President.

ADDRESS OF WELCOME.

Hon. James D. Phelan, Mayor of San Francisco, delivered an address of welcome, as follows:

Mr. President, Ladies and Gentlemen:

It is my pleasure to welcome you to the city of San Francisco. I judge that you have selected our city as a meeting place because it is neutral territory; we do not grow here either the orange, or the lemon, or the prune; in fact, ours is a barren peninsula. A great many years ago a Spanish king sent a commissioner to California to locate the villa of Branciforte; he traveled up and down the coast, and reported on the eligibility of various places. Of San Francisco, he said there was neither water, nor wood, nor arable land, and that it was impossible as a place for human habitation; so he selected a site on the San Lorenzo

River, near Santa Cruz, as the most eligible location. San Francisco was justly condemned then as having no tillable land. The Mission fathers cultivated gardens, and had cattle and sheep grazing on our hill sides; but, apart from that, we have ever since remained, with respect to the great productive possibilities of the State, a neutral land, where, at any rate, the growers can meet on common ground without fear of rivalry.

San Francisco, without her great facilities for trade and transportation, would be of little value to the State. Fortunately, we are located on a superb bay and harbor, and the volume of freight by sea and by rail has proven us to be a shipping point for every form of productive industry.

San Francisco occupies a central position; it is a great business emporium, and we regard ourselves as in duty bound to care for the productive enterprises of California, the great sources of its wealth—horticulture, agriculture, and mining.

Recently a meeting of the California miners was held in this city, just as you meet to-day. Our city is always willing to extend every possible assistance in enlarging the markets for California products. We are aggressive and active in helping the producers who stand back of our great city and whose industry has made it great.

I was in Paris at the exposition last year, and I thought I saw there a certain market for California fruit. At the breakfast table, I ordered peaches; it was at the Hotel Reitz; and they were brought to me served on a small board with velvet pockets, and in each pocket was a peach. I ate four peaches; the bill rendered was one dollar and twenty cents. I was shown on the menu that their price was marked at a franc and a half each. Now, if it is possible to create a market in Europe for California fruits, when the prices obtained there are so very extraordinary, I am sure that the fruit industry would surpass every other industry in California. It certainly would resemble a gold mine in productiveness. There, fruit is served as jewelers display jewels, in velvet boxes!

In reading the consular reports last July, I was rather confirmed in my impression that there is a great European market for California fruits. The following translation from a Valencia paper has been received from Consul Bartleman, of that city, under date of April 10, 1901:

> Spanish products are rapidly losing ground, and, unless our methods be brought into line with those of progressive nations, our wines, our oil, our fruits, and our vegetables will be condemned to home consumption. We have been astonished at the falling off in our exports of fruit and fresh vegetables to France, England, and Germany. The decrease for France, notwithstanding the enormously enlarged consumption created by the Paris exposition, was erroneously attributed to Italian competition. The rivalry really comes from the United States. California is now supplying the French, English, and German markets with fresh fruits and vegetables. The fruits are not offered at lower prices than our own, but they are presented neatly packed and in splendid condition.

> It is ridiculous to think that fruits and vegetables raised on the slopes of the distant Pacific should compete at the very doors of Spain with those produced in this country, yet the fact is undeniable. How is the mystery explained? It is simply this: Spain sends her fruits and vegetables in the worst possible condition, so far as packing and transportation are concerned; piled on wretched railway cars, exposed to sun and rain, and reaching Paris from fourteen to seventeen days after their departure from Valencia; while the Californians offer their fruit in the same fine condition in which it is picked from the trees. Their oranges, apples, peaches, and pears reach Paris, after traversing 6,000 miles, in a more attractive and appetizing condition than ours after a journey of only 490 miles.
>
> We can compete with America only by employing her methods—improved cultivation, harvesting, and packing, cold storage, and rapid, safe transportation. Otherwise, our exports will decline every day. Castile was once called the granary of Europe; yet we have lived to see foreign wheat, after paying heavy transportation taxes, protective duties, and an adverse premium of thirty-five per cent in exchange, competing with our home-grown cereals. Shall we live to see American oranges competing with ours on the Valencia market itself?

Now, that is very interesting if you are not already familiar with it, because it shows the possibility of enlarging the markets for our fruit, which, of course, determines the prices of fruit.

By the construction of the Nicaragua Canal, some seriously contend that the trade of the Orient would pass by San Francisco and that possibly we would suffer, but California's resources will be increased when the market facilities are increased. In using the Nicaragua Canal, by which a distance of 10,000 miles will be saved in reaching remote markets, transportation charges will certainly fall, and we can send shiploads of our products to the great markets of the world. The people in the oriental lands will also independently be brought to appreciate our products. Together with this, on the eastern coast and in northern Europe, dwell great populations, and they can be more easily reached by a facilitation of the transportation offered by the completion of this canal.

California has that of which Spain, Italy, or France can not boast—variety of products. This is an element of safety, for if one fails, another will yield. Considering the State collectively, we are thus always protected, though here and there an individual may suffer. We must not lose courage on account of frost or scale, because those ills will find their remedies. Science will devise means, as it has for protecting the vine in France.

A former Mayor of this city, Frank McCoppin, as United States Commissioner to Australia, introduced the *Vedalia cardinalis*, or ladybird, which has done so much in California to destroy insect pests. Now, it is proposed to turn our cannon against Jack Frost.

I have a report from the United States Consul at Lyons, in which he says that they have discovered in France how to prevent frost by the discharge of cannon. If we can use our army and its great guns for the purpose of preventing frosts, it, I am sure, would appeal very strongly to the producers of this country. [Laughter.] We can then afford to support our military establishments in time of peace. He says:

> The last number of the Gironde, a Bordeaux newspaper which represents the wine-growers of that region, contains an article by M. Bellot de Minieres on the subject of preventing frosts from injuring early fruit. His theory is that it is not the frost which blasts the budding fruit, but the sun's rays following a night of frost and finding in the grape, already sensitive from the cold, an object unable to withstand their heat. After many experiments, which he says have always succeeded, M. Bellot de Minieres recommends the accumulation, at various points in the vineyard, of combustible matter, capable of producing a thick, black smoke, and setting fire to these heaps of fuel at sunrise, so that a veil of smoke may cover the entire ground, protecting the vine by its opaqueness against the sun's rays and maintaining the general temperature of the vineyard at a point which will counteract the effects of the frost. The smoke, which acts as a warm blanket, lifts gradually enough for the vine to adapt itself to the changed temperature.
>
> Since I reported on the subject of firing cannon for the prevention of hailstorms, the use of cannon for other allied purposes has been discussed in agricultural circles. Dr. Marangoni, professor of physics at the Royal Lyceum of Florence, Italy, has declared his belief in the efficacy of the use of cannon for the prevention of frosts. He says: "There are astonishing resemblances between the state of the atmosphere which produces hail and frosts. * * * An absolute calm is necessary for both. * * * In the phenomena of the white frost * * * the calm creates a very cold layer of air near the surface of the earth, saturating the otherwise dry air, and at the coldest moment the frost is formed. * * * The important object to be achieved in the case of both hail and frost is to break up the calm before either is formed."
>
> He recommended that the cannon be fired horizontally over the ground to be protected. Under his direction, cannon were fired horizontally over the vineyards of Count Balli, at Asti, and he relates that a strip of vineyard five hundred feet wide over which two cannon were fired was entirely protected, while the vines on each side were badly injured by the frosts.
>
> At the central office of the agricultural societies in this part of France, I was told that extensive preparations are being made to test the efficacy of cannon against frost this spring.
>
> One of the gentlemen who is working on this question said to me: "The frost is formed by the stored heat of the sun combined with an excess of dampness; * * * the firing of the cannon produces perturbations in the atmosphere, causing a slow transition between the coldest hour of the night and the coming of the heat of the sun."
>
> It has just been determined to hold an international cannon congress in Lyons next November, in which this subject will be fully discussed, and I am requested to say that American representatives are invited to be present and to take part in its deliberations.
>
> As an invasion of grasshoppers is announced for this summer in southern Algeria, cannon are to be tried against them also.

I have read that report with interest and desired to communicate it to the Convention, but knew of no better way than to communicate it myself. It is hardly within the lines of an address of welcome, but we of the city are your friends, your interests are ours, and we follow the work that interests you. We will contribute in every way possible to the success of your deliberations, and bid you again a cordial welcome. [Applause.]

Upon motion, the thanks of the Convention were extended to Mayor Phelan by a rising vote.

PRESIDENT COOPER'S ANNUAL ADDRESS.

This is the twenty-sixth State Fruit-Growers' Convention, and the twenty-second held under the auspices of the State Board of Horticulture. A brief review of the year's results in the fruit crops in the different localities of the State encourages the belief that greater prosperity exists than for several years past. The deciduous fruits in the northern and middle portions have brought good prices, especially for the cured product. The orange crop in the southern portion has been good, and the prices realized also better than for the past few years. The lemon industry was much depressed by excessive importations. The walnut crop was a fair average, and the prices higher than for many years past, excepting the previous year (an advance obtained by reason of a small crop). The prune crop has not been marketed successfully; nor has the raisin crop; and it is to be regretted that the best efforts and the best minds striving to coöperate in the disposal of these fruits have not been united. Differences regarding the management have caused dissatisfaction and dissension, which is greatly to be regretted and is a serious detriment to the success of the growers.

The question of marketing fruit has the largest place on our programme, and the many essayists who will treat this subject will no doubt explain every phase of the difficulty; and I hope that the final outcome will harmonize the various opinions, and that we will arrive at the most complete system of coöperation, which will give satisfactory results.

To quote from an experienced fruit-grower: "We know the soils best adapted to various fruits; the best varieties to plant for family use and commercial purposes, and know how to evaporate them. We have also learned what varieties to plant for pollinating purposes. We know most of the diseases and insects infecting trees and fruit, and how to combat them. But the marketing of our products to advantage is the greatest problem that confronts us. We have plenty of growers who can produce the very best fruits ready for market, but there their generalship ends. To place these goods in the world's markets at a profit to themselves is a feature they have never studied, and therefore are not able to execute the plans they have so carefully prepared. It requires a thorough commercial training to do this special work."

INSECT PESTS.—The losses sustained in combating the noxious insects that infest the fruits and fruit trees are as great, if not greater, than from improper distribution and bad marketing of the fruit products. According to an estimate of the average expense by the fruit counties, it amounts to $300,000 annually. This does not include the loss caused by the ravages of the pests. In the artificial remedies applied there is from year to year no decrease in the cost, but rather an increase, so that as long as the fruit-growers rely upon such remedies it is likely to be a perpetual tax on the industry. If, however, we bend our energies in the line of combating these pests by their natural enemies, very soon all this loss and expense would disappear. In our experience we have had ample proof that combating these noxious insects by their natural enemies is the only method that can be relied upon to give us relief. We have expended in this direction, in the first voyage of Albert Koebele, $2,200, paid out of the appropriation of $50,000 by the United States Congress to advance the American interests at the exhibition at Melbourne. In Governor Markham's administration $5,000 was appropriated. In Governor Gage's administration $7,500 was appropriated. In these expenditures of less than $15,000 during a period of thirteen years (Report 1891, p. 290), many millions were saved to the fruit-growers of California; also, through our experience an equal amount in South Africa, Hawaii, and other places.

As an incident the Hawaiian Government had such confidence in the result of Mr. Koebele's researches, that they secured his services at more than twice the salary paid to him while in the service of California. Immediately on securing the $7,500 appropriation the State Board made application to the Hawaiian Government to procure the services of Mr. Koebele, and were told by that Government that California had not money enough to get Mr. Koebele. The State Board employed Mr. George Compere, and by exercising the greatest economy kept him traveling nearly two years. During this period, eighty-five strong colonies of scale and aphis destroyers were received and liberated in seventeen counties. Among these was the smallest ladybird known, the destroyer of the red spider, and fourteen colonies of internal parasites of the black scale. Among the number was the parasite of the grasshopper, and probably the most important was the parasite of the red scale, sent from China, and which we believe is permanently established in Southern California.

I will not, however, take further time in mentioning the particulars of the results of Mr. Compere's searches, but refer you to the detailed report of Alexander Craw, our quarantine officer, to be presented at this meeting. Before leaving this subject, however, I will state that the Australians were so interested in the work of Mr. Compere that he has been made a member of the Board of Agriculture of West Australia, and is working for that country on the same line of investigation as he did for us. It is not remarkable that these countries mentioned—Hawaii, Australia, and South Africa—have taken such a deep interest in the search for parasitic insects to destroy fruit pests, but it is most remarkable that California, having probably ten times the interest, should not have kept up a permanent appropriation to continue so important an investigation. We have found continued opposition by the Department of Entomology at Washington and by the entomologists of New England and the Middle States. In correspondence with the State Board of Agriculture of Massachusetts concerning the gypsy moth, that board was requested to set apart $5,000 from an appropriation of $250,000 and send an entomologist with our searcher to look for the natural enemy of this moth, which is known to exist in northern middle Japan. This was refused, and the names given of seven entomologists of New England, New York, Pennsylvania, and New Jersey, whose advice was against the proposition. They have spent a million of money in trying to stamp out the gypsy moth, and yet the territory of its ravages is extending.

Irrigation.—There has been so much written and published on this subject in the past two years, that I will not dwell on it, but refer you to my opening address of one year ago, and also call your attention to the appeal of the National Irrigation Association; headquarters at 1707 Fisher Building, Chicago; George H. Maxwell, executive chairman. His appeal is to all those interested in the subject to become members of the association by contributing annually five dollars, which will entitle them to all the publications, and to organize in each district and to instruct our representatives in Congress to favor a national system. The executive chairman asks for the indorsement by this Convention of the principles advocated by the association.

Forest Protection.—This question goes hand in hand with irrigation, and is a part of the appeal above mentioned. On this subject I refer you to my remarks made at the Fresno convention.

Food Adulteration.—I call your special attention to my remarks of one year ago. This subject is claiming the attention of many of the States, and the most severe laws have been enacted to protect the consumers in the quality of foods placed on the market for sale. I call your attention to what has been done in the State of New Jersey, where thousands of dollars have been appropriated to ferret out and to punish offenders who have on sale adulterated articles or substituted articles of food products without proper labels. The adulteration and substitution of food products concern the industries of California more than those of any other State in the Union, and yet not one dollar has been appropriated to protect those industries.

We have on our statute books a dairy law, an olive oil law, a drug law, and a pure food law generally, also a horticultural quarantine law to protect us from new diseases, etc. Regarding the latter I beg to quote from a very able opinion given by Judge John F. Ellison in a suit brought in Tehama County. He said: "It is a crude and unsatisfactory mass of legislation upon a very important subject. The fruit industry is one of the largest and most important in this State, and it would seem that some plain, simple legislation upon so important a subject should be formulated and passed."

Regarding the olive oil law, Judge Torrance, of the Superior Court of San Diego County, in a test case appealed from the Police Court, decided that the sections of the statutes making it unlawful to substitute any inferior or cheaper article whatever, wholly or in part, for another, or to sell one article under the name of another, are unconstitutional.

The Sacramento Record-Union on July 11th published as an Associated Press dispatch from the Union of San Diego, that former State Senator D. L. Withington stated that under the amended pure food law the word "manufacture," which was in the old law, was omitted, and that the words "knowing" and "knowingly" have been inserted in the new act, so that the prosecutor must prove that the seller of an adulterated product had knowledge that it was adulterated when he made the sale—a fact not ordinarily susceptible of proof. It seems to me that these laws should be revised by some competent attorney so as to overcome or remedy their defects, and a mode be devised of sampling foods offered for sale, and analyzing them and prosecuting offenders, with an ample appropriation to insure the relief which was intended.

CLEOPATRA'S NEEDLE.—In my opening remarks at the Convention held one year ago, I recommended that an effort be made to remove Cleopatra's Needle from Central Park, New York, and set it up in Golden Gate Park, San Francisco, giving my reasons why this should be accomplished (see pages 80–82 of the Report for 1900). A resolution was passed referring the matter to the California State Board of Trade and the Park Commissioners. No action has been taken by either, so far as any report to the State Board of Horticulture. My enthusiasm to secure the greatly-desired object has not abated. There are several important localities in the State where the obelisk could be set up, and since San Francisco has practically done nothing the matter should be taken up by a committee of fruit-growers and farmers, who could ask for bids from various localities for its possession, and an additional sum, if it should be necessary, could be donated by the fruit-growers and farmers to meet the expense.

RECOMMENDATIONS.—I will not discuss further in this paper the matters that are coming before this Convention, but before concluding will recommend:

First—That we pass a resolution, to be sent to our members of Congress, that we object to and will oppose any reduction in tariff duties on fruits and fruit products by reason of reciprocity considerations.

Second—That we urgently request that a route for an interoceanic canal be selected, the work to be commenced and the final completion to be consummated at the earliest possible moment.

Third—That we re-introduce a resolution setting aside from settlement our mountain lands, as passed two years ago at the San José Convention. (See Report, page 138.)

Fourth—That there be appointed a committee of fruit-growers and farmers to take up the matter of removing the New York obelisk to California.

Fifth—That there be appointed a committee to take up the subject of California's horticultural exhibit at the exposition to be held in St. Louis in 1903, and report the same at the next Convention.

Regarding resolutions to be presented to the California Legislature, I would suggest that they be deferred until our next Convention, to be held in November or December, 1902. The next Legislature will not convene until January, 1903. The better plan would be to appoint committees to formulate resolutions to be presented at the next Convention for confirmation, or to instruct the Executive Committee of the State Board of Horticulture to have such resolutions formulated for presentation. Subjects to be acted upon:

First—An appropriation of $10,000 for the investigation of parasites and predaceous insects and the procuring of same to destroy noxious insects, for distribution in California.

Second—Our quarantine laws to be simplified and improved, as suggested by Judge Ellison.

Third—Our pure food laws to be revised and amended so as to be operative, and a mode devised to carry out the object, with an appropriation that would insure active work in the line of establishing true labels on all food products.

All these matters are respectfully submitted for your consideration.

Upon motion, A. H. Naftzger, B. N. Rowley, E. J. Wickson, H. P. Stabler, and W. J. Hotchkiss were appointed a committee on the President's address.

REPORT OF THE CALIFORNIA FRUIT GROWERS AND SHIPPERS' ASSOCIATION.

By H. WEINSTOCK, President.

Season's Shipments.—The following is a summary of the results of the season's shipments:

Cherries.—The crop of cherries during the past season in California was very light, there being less than half as many carloads sent East during the season just closed as during that of one year ago. The quality of the fruit was generally good, in fact superior to that of the preceding season, and excellent prices were realized.

Peaches.—California had a very good crop of peaches, as is evidenced in the fact that over 500 more carloads were sent East during the last season than during that preceding it. While early peaches realized fine prices, not until the latter part of August, when a tremendous crop of Eastern peaches was marketed, did a "slump" occur. With the exception of Salways and a few of the later varieties, splendid prices prevailed on peaches, netting very satisfactory returns.

Plums and Prunes.—Only a fair to light crop of plums and prunes was harvested, the output of these being nearly twenty per cent less than for the preceding year. Owing to the marvelously fine prices ruling on California plums and prunes during the entire season, it is safe to say that very nearly everything obtainable under this head was shipped East, with satisfactory results.

Pears.—The pear crop of the State was an average one, although the records show a falling off of about 600 cars as compared with the shipments of last year, the crop of which, however, was unusually large. The prices obtained for good pears were particularly satisfactory, there being no "slump" or weakness in the Bartlett pear market at any time during the season.

Grapes.—The State produced an average crop of grapes. The shipping records will show an increase of over 150 cars for Eastern shipments. This, however, is not due to a larger crop, but more directly to climatic conditions, the weather during the closing days of the season being particularly favorable for grape shipments, permitting growers to move nearly their entire crop—as one grower expressed it: "shipping everything down to the roots." The prices on grapes were also good.

Apples.—A large crop of apples was produced, which has been going forward for some time, and is still actively rolling. Owing to a light Eastern crop, the demand from that section has been brisk. The entire apple crop of the State will be moved at very satisfactory prices, and in advance of previous seasons. Over 1000 carloads will go forward from the Watsonville section alone during the present season, showing an increase of one hundred per cent over last year's shipments.

RAILWAY SERVICE.—There was a marked improvement in the railway service during the early part of the season over last year; but on the whole it did not come up to expectations. Up to about the middle of August fruit was delivered to Chicago in 7 days, to New York, Philadelphia, and Montreal in 10½ days, and to Boston in 11 days; but later in the season it was about 9 days to Chicago, 12 to 13 days to New York, Philadelphia, and Montreal, and 13 to 14 days to Boston. As near as can be determined, the greater part of the delays was west of Chicago. In the early part of the season the Southern Pacific Company landed cars in Ogden from Sacramento within 60 hours—later it took 72 hours—while the Union Pacific also made 12 hours slower time at the close than at the beginning of the season.

The experience during the early part of the season made it plain that the Western roads can deliver to Chicago in 6 days. When this is done, New York, Philadelphia, Montreal, and Boston can be reached in 9 or 10 days.

REFRIGERATOR CAR SERVICE.—The refrigerator car service for the season was eminently satisfactory. No shortage of cars occurred at any time, and shipments received careful attention.

EXTENSION OF MARKETS.—There is room for further development of markets for California fresh fruits. This matter, however, rests largely with the transportation companies. If they will deliver to Chicago in 6 days, and to Atlantic points in 9 or 10 days, it will insure the arrival of fruit in a condition to permit of its re-shipment in less than carload lots to minor points. With the time consumed during the latter end of this season, it became extra hazardous to re-ship to minor points. The fruit must, therefore, be consumed at the point of arrival, thus limiting the possibilities for developing newer and smaller markets. This fact should be brought to the attention of the railroad authorities, in the hope that they will make every effort to give the service needed to secure the broadest results for the sale of California fresh fruits.

PACKING.—While there is room for still further improvement in this direction, it is gratifying to note that there has been less complaint this season of poor packing than ever before. More attention than ever is being paid to this matter, and growers are fast learning that it pays, and pays well, to give the Eastern buyer honest, careful, and sightly packing. It is hoped that the growers of California will strive to win the reputation of being the finest packers of fresh fruits in the world. Such a reputation in itself will add to the value of California fruits. Buyers will have less hesitancy in buying from samples and more confidence in getting what they have a right to expect.

PRICES.—Excepting late peaches, prices for the season on all fruits averaged about twenty-five per cent higher than last year. This improved result is the outcome of several favorable conditions: (*a*) Better railway and refrigerator car service; (*b*) A lighter crop of Eastern fruits; (*c*) More care in selection of fruits; (*d*) Better packing; (*e*) The reduction made by the Southern Pacific Company of from 26,000 to 24,000 pounds minimum to the car. This made better refrigeration possible and aided the fruit to arrive at its destination in better condition.

Late peaches did badly, because of too many being shipped at the time when the Eastern crop was being marketed. In this connection I beg to refer to my last year's report, in which I said: "This year's experience has made plain that, so far as peaches are concerned, whenever the Eastern States have a full crop, it is unprofitable to send any but the very finest peaches, of good keeping qualities. The balance should be retained at home and canned or dried."

SUMMARY.—On the whole, this has been one of the most favorable years in the history of the California fruit industry. The results can not but have added very much to the value of California fruit lands, and to have inspired the fruit-growers with renewed courage and hope in the future.

With the growing experience and higher judgment that is being exercised on the part of the grower in the planting, cultivating, harvesting, packing, and marketing of his crop, the outlook was never brighter for the future of the California green fruit industry.

Table Showing Destination and Number of Cars Shipped to Each Place in 1895, 1896, 1897, 1898, 1899, 1900, and 1901.

Destination.	1895.	1896.	1897.	1898.	1899.	1900.	1901.
Chicago	1473	1007	1410	1203	1060	1101	1273
New York	862	1055	1456	1429	1694	1527	1482
Boston	279	471	543	536	710	649	639
Philadelphia	82	90	202	176	339	212	257
Minneapolis	124	147	180	167	247	302	275
Baltimore	37	5	16	16	67	34	23
Cincinnati	15	2	20	15	89	35	29
Kansas City	91	81	86	116	165	129	85
Montreal	44	81	98	96	128	126	128
New Orleans	75	85	81	62	126	136	118
Denver	148	136	98	229	269	233	246
St. Louis	78	68	59	27	115	79	64
St. Paul	109	91	121	67	125	131	108
Omaha	176	85	165	156	194	240	205
Cleveland	29	10	37	25	83	63	58
Pittsburg	26	25	40	47	137	144	167
Buffalo	15	7	15	5	34	10	32
Milwaukee	42	32	52	19	60	68	62
England	------	42	58	42	117	192	93
Scotland	------	------	------	------	4	7	16
Germany	------	------	------	------	2	------	------
Mexico	------	------	------	1	1	------	1
Minor Points—Canada	------	------	------	------	52	71	55
Minor Points—United States	863	532	586	572	1051	946	1043
Totals	4568	4052	5323	5007	6869	6435	6459

Table Showing the Number of Cars of Each Variety Shipped in 1895, 1896, 1897, 1898, 1899, 1900, and 1901.

Varieties.	1895.	1896.	1897.	1898.	1899.	1900.	1901.
Pears	1187	1624	1640	1595	1684	2115	1535
Peaches	1289	976	1316	1103	2625	1361	1901
Grapes	1010	712	1100	734	847	825	966
Plums and Prunes	465	407	742	542	885	1158	936
Apricots	162	172	177	123	90	152	201
Cherries	180	88	239	297	85	238	110
Apples	105	53	61	596	490	512	739
Quinces	13	8	24	1	19	10	13
Figs	------	2	3	------	-----	------	------
Nectarines	5	1	10	------	2	------	2
Persimmons	------	------	2	1	1	3	2
Mixed	152	9	9	15	24	27	23
Cars not reported	------	------	------	------	117	34	31
Totals	4568	4052	5323	5007	6869	6435	6459

Upon motion of R. D. Stephens, the report was received and placed on file.

REPORT OF COMMITTEE ON FOREIGN CONSULAR ADVICES.

Mr. Edward Berwick, Chairman of the Committee on Foreign Consular Advices, presented the following report, which was received and placed on file:

On the re-appointment of your committee at last year's convention, Mr. E. F. Adams kindly undertook a correspondence with Senator Perkins and Secretary Hay, which eventuated in Secretary Hay undertaking to instruct the Consular Service to obtain such information as to fruit crops, prices, stocks, etc., as the fruit-growers wished. With some difficulty and delay it was ascertained just what were the fruit-growers' wishes in detail. These were duly communicated to the Secretary of State.

Mr. Adams, finding the correspondence required too great a demand on his time, interested Mr. Eugene Goodwin, of the Pacific Commercial Museum, in the matter. This gentleman not only completed successfully the work so ably begun by Mr. Adams, but formulated a special cable code, and the Pacific Commercial Museum has thus far borne the expense of all cablegrams.

Your committee deems that it would be right for this Convention to request our representatives in Congress to arrange for this expense in future to be included in the appropriation for the Department of State.

It also seems desirable that the service should be so extended as to include reports as to apples and pears, seeing the growers of these fruits far outnumber all other fruit-growers and are found in every State of the Union.

Those desiring further information of the work of the committee are referred to the correspondence appended hereto and made a part of this report.

MR. BERWICK. Mr. President, if you will appoint a time, Mr. Eugene Goodwin will appear here and discuss the subject-matter contained in this report.

PRESIDENT COOPER. We will hear Mr. Goodwin at 2 o'clock this afternoon.

REPORT OF COMMITTEE ON NICARAGUA CANAL.

MR. EDWARD BERWICK, chairman, presented the following report of the Nicaragua Canal Committee, appointed at the last Convention:

The resolution respecting the Isthmian Canal, passed at your last Convention, was duly forwarded to your representatives in Congress.

During the past year the Isthmian Canal Commission has completed its investigations, and sent in its final report to the President. That commission definitely recommends the Nicaragua route, as being the most feasible and practicable one. It remains for the Congress now in session to take action as speedily as may be on that recommendation.

The inability of the present transportation companies, as shown in the past year, adequately to handle even the present amount of our rapidly increasing produce, not only accentuates the need of the canal, but leads to the hope that they may withdraw their opposition to the project; which opposition has notoriously been in the past the main bar to satisfactory congressional action.

After the obsequies of the lamented President McKinley, your committee wrote to President Roosevelt, urging him to employ his strenuosity in thwarting the machinations of opposing corporations, and obtaining the abrogation of the Clayton-Bulwer treaty. The letter was referred by the President to the Secretary of State for his due consideration.

Your committee would respectfully suggest that all friends of the canal should redouble rather than reduce the amount of energy they can expend in agitating the prompt construction of the canal.

Obviously the powers of resistance offered by a $2,000,000,000 aggregation of capital is twenty fold greater than that presented by one of only $100,000,000.

The report was received and placed on file.

MR. BERWICK. I have in my pocket here the interim report of the Walker Commission. I have always borne the canal in mind, as most of you have, as a thing we all need and have needed for a long time. I don't think we always realize our importance as makers of history in these great matters. You all know that commerce is the conquering power of the day. What is the foundation of commerce? It is not the merchant; it is the producer and grower of fruit; and this being a fact, the California fruit-grower is a heavy factor in the commerce of the United States. It occurs to me that we do not feel important enough. We have made history to the tune of somewhere in the neighborhood of 16,000 carloads of fruit in 1890. Our entire product in fruits, vegetables, and things of that sort last year was 66,000 carloads. What are those carloads worth, together with the boxes and transportation? Shall we call them $500 a car? At these figures you will see that we have, in the last ten years, added an immense sum to the State's production—we have added this to the commerce of the State. I say commerce rules the world to-day, and I think we fruit-growers should feel that it is important that we should meet often and talk these matters over, and that we have a right to address our President and our representatives in Congress in our efforts toward the completion of the Nicaragua Canal. It means rapid transit to Europe; not only that, but cheap transportation and an easier ride for our fruit. You have all been on freight trains. Sometimes it jars you, and jars our fruit, too, before it is ready for the "jars." The steamboat does not do anything of this sort. God's highway is a very smooth highway for fruit to travel over. You put your fruit in the steamer on cold storage, and it goes wherever you want it to go without a jar. The Nicaragua Canal renders that thing possible.

MR. ADAMS. I would like to call your attention to one matter that no one has ever succeeded in getting the public on this Coast to take hold of. I presume that you are all familiar with the fact that in the coast-wise commerce (ships passing between one port and another in the United States) none but American ships are allowed to engage. The important thing for us to get is cheap rates through the canal between our American ports—between the Pacific and the Atlantic. Home markets are the best markets we have. This market of California and the Pacific Coast is worth more to the people of the Atlantic Coast than any other market they can get. What we ought to have is reduced rates on coast-wise commerce. As yet the people have never got hold of that part of the question. Carefully reading the text of the treaty leaves me in doubt whether, under the treaty, there can be any rebate on the coast-wise trade as it now stands.

MR. BERWICK. I supposed there was none. If this was extended to the East, we could ship East and the East could ship to us at the reduced rates. This is a matter of the most importance to the fruit business. It is to the sailing ships that we may look for the greatest reduction in freights and for better time.

AFTERNOON SESSION—FIRST DAY.

Tuesday, December 3, 1901.

The Convention was called to order at 1:45 o'clock.

President Cooper announced the following Committee on Resolutions: W. H. Aiken, B. N. Rowley, B. E. Hotchkiss, B. G. Hurlburt, Leonard Coates.

FRUIT OUTLOOK IN THE SAN JOAQUIN VALLEY.

By I. H. THOMAS, of Visalia.

I received some time since a letter from your Secretary, Mr. Isaac, asking me for a paper to be read at your annual convention, upon "The Future Outlook of Deciduous Fruits in the San Joaquin Valley." I consented to write such a paper, provided Mr. Isaac would allow me to add the citrus industry to the paper. This he did.

In 1893, while a member of the State Board of Horticulture as Commissioner for the San Joaquin Valley, I made a report of the then conditions of deciduous and citrus fruits in this valley, taking up each county from San Joaquin to Kern. This report was published in the Fourth Biennial Report of the State Board of Horticulture for 1893 and 1894.

Since that time there have been a great many changes made in the planting of deciduous fruits in this valley. Where mistakes were made in the planting of wrong varieties, orchards have been rooted up and leading varieties planted; and in many instances where irrigation brought the alkali to the surface too strong for stone fruits, trees have been taken out and pear trees substituted, and they are now producing profitable crops. The present outlook in the valley for deciduous fruits was never better, as irrigation systems have been extended, bringing large quantities of good lands within reach of water. The mode of irrigating with pumping plants is now coming to the front, so that anybody with a twenty or forty acre tract of land can put in his plant and go to sleep at night without being haunted in his dreams with suits of riparian owners and assessments for water.

The discovery of oil in this valley solves the question of irrigation for the orchardist, as it has made it possible for him to have water the year round. All he has to do is to turn on a small stream of crude petroleum and start his pump, at the cost of only six cents per horse power per ten hours.

At our district fair, held at Hanford in October, Mr. R. G. White, of that city, had the Daniel Best crude-oil engine on exhibition. This was an eight-horse power engine with three pumps attached, running at an expense of only forty-eight cents for ten hours, using only twelve gallons of Coalinga crude petroleum each ten hours. For each additional horse power it takes one and a half gallons of oil for ten hours' run. This oil costs, laid down in Hanford, four cents per gallon, or about one tenth of what it would cost to run with steam.

The completion of the canals around Modesto and Turlock has made it possible for thousands of families to secure good homes on lands that are easily worked, and with water are very productive, growing anything in the fruit line that may be planted thereon. It is the writer's opinion that some of the best olive lands in the State are in this section. Merced and Madera, as well as Fresno, are also well to the front in the growing of deciduous fruits.

I have not the statistics of the shipments of fruits from Fresno this season, but the output is very large and has been quite profitable to the growers, as well as giving employment to thousands of men, women, and children in the canneries and packing-houses.

TULARE COUNTY, the home of the peach, nectarine, and prune, has had a prosperous season, and the growers have done well in shipping green fruits East, as well as supplying canneries in other parts of the State.

The Visalia cannery this season used 3,178 tons of peaches, and our dried prune output for the season is 7,280,000 pounds. To substantiate the claim that this county can grow more prunes to the acre than any other portion of the State, I will mention one orchard (the Togni orchard, near Visalia) of 39 acres, that averaged this season 342½ pounds of green fruit per tree, and the cured product 4 tons per acre. This orchard is six years old.

The shipments of green fruit East from this county this season have been 275 cars, realizing to the grower from $75 to $150, and on Tragedy prunes, $200 per acre. Of dried fruits (aside from prunes), the amount shipped is about 50 cars, at prices satisfactory to the grower.

A large quantity of our grapes has gone to the wineries and thus made it possible for raisin-growers to all come under the same umbrella (which they have not done) and get good prices for their crops.

The producing capacity of our soils does not seem to be depreciating, as I have reliable statements of sixteen tons of Thompson's Seedless and Sultana grapes being harvested per acre in the Dinuba and Orosi districts.

KERN COUNTY has been carried away with an oil excitement, and orchards and vineyards have been neglected, though there are thousands of acres of as good fruit land in that county as there is in the State.

Kings County.—This county is well to the front in deciduous fruits, and still has a large acreage of deciduous fruit lands yet unplanted. The growers had fine crops this season and received fair prices. The great problem that now stares them in the face, as well as the growers of other counties in this valley, is the pear blight, which looks as if it will destroy the pear industry in this valley. The eradication of this pest or disease, or explaining what it is and providing a remedy for the same, is far beyond the brain capacity of the ordinary county horticultural commissioner, and if immediate help does not come from our State Board of Horticulture or from university professors, there will be a great loss in this valley by blight.

In conclusion of my remarks on the deciduous outlook would say that the chance for making money in this valley out of deciduous fruits is as good now as it ever was. The planter now can profit by the experience of others, knowing just what to plant to supply canneries and Eastern shipments, as well as to grow the best drying product. With our facilities for irrigation, the planter should not now make a failure.

Citrus Fruits.—Now as to our citrus industry. I will not weary you, but will give you a brief mention of the principal localities where orchards are now in bearing.

The citrus belt of the San Joaquin Valley commences in Kern County and occupies the thermal belt of the west slope of the Sierra Nevada Mountains to the northern part of the State. The planting of citrus trees for profit first commenced on a small scale at Porterville about the year 1888, and the first carload was shipped from that place in 1891. At this writing there are 800 acres planted to oranges and lemons, with a shipment of 325 cars from the Porterville station for the present season's crop. The water for irrigating this section comes mostly from Tule River, though many of the orchards are irrigated from pumping-plants, there being no difficulty in getting water at a minimum cost.

In 1888 the Lindsay Land Company purchased 2,000 acres of land where the town of Lindsay now stands, and incorporated, with Captain Arthur J. Hutchinson as manager. The company at once commenced the improvement of its holdings, and now has planted in that district 1800 acres. The first shipment from this place was in 1896, when 10 carloads were shipped out. This season the crop will amount to 300 cars. The orchards in this vicinity are in small holdings, which are irrigated by water from pumping-plants supplied by the Lindsay Water Development Company. This section of Tulare County is underlaid with plenty of water, at a depth of from 40 to 100 feet, and power is furnished by the Kaweah Electric Power Company. There is an abundance of water for all and during all times of the year. Besides the Lindsay Land Company, other companies have and are now opening up large tracts of land around Lindsay, and are meeting with success in finding water. Messrs. Hammond & Wishon have two large tracts, consisting of 500 acres, which are cut up in small holdings, with water developed to cover all the land.

One of the chief points in the oranges grown in this section is, that while they do not show much outward color when picked, the meat inside is well colored, sweet, and full of juice, causing them to color readily when packed, without shrinking, as many oranges do when gathered green. Lemons from this section, even on November 21st, at public auction in New York, brought $1 per box more than imported lemons.

The area now planted at Exeter is about 1800 acres, in large holdings, and the shipments from there this season will be 175 cars. This section is mostly irrigated from a ditch taking water out of Kaweah River, some 12 miles northeast of Exeter, though they do not rely altogether on the ditch, and have wells and electric power to resort to when the water is low. At one point here the water is forced up on a mountain to the height of 500 feet, where several hundred acres are being planted in a belt that is absolutely frostless, the temperature being 15° higher on the mountain side than at the base. Citrus trees along the base of the mountain come into bearing very young. As an instance, Mr. Griffin has a two-year-old orchard here that will yield a carload this season, some trees with a half box of merchantable fruit on them.

The Bonnie Brae orchard, managed by Mr. George Frost, being the oldest orchard here, is making the most of the shipments this season, though Mr. Moore and Mrs. Newhall have orchards that are almost paying for themselves in this season's crop.

Lemon Cove, some ten miles northeast of Exeter, has 480 acres planted to citrus fruits, mostly lemons, to which fruit the soil is best adapted, and I have no hesitancy in saying that there is no place in California that can produce a better lemon than this section, which fact has been demonstrated by analysis. The shipments of lemons alone from this point this season will be 80 cars.

Antelope Heights, situated on the north side of the Kaweah River, is a new development, and there are about 300 acres planted, the trees now being one and two years old. The orchards are in small holdings, and are irrigated by pumping-plants with an inexhaustible supply of water. This section will never be bothered with frost, and is destined to be one among the best localities in the valley for citrus fruits.

East of Sanger and Reedley, in Fresno County, there are about 1600 acres planted to citrus fruits, the trees mostly one and two years old. The shipments from this section will be about 40 cars.

Along the foothills in Madera, Merced, Stanislaus, and San Joaquin counties, there are thousands of acres of citrus lands, which need only water to make them profitable.

In conclusion I will say that the localities I have spoken of in this paper are, to my mind, not to be excelled in this State for citrus-growing. They are free from scale, as the climate is such that many of the scales that infest other parts of the State can not live here. Our oranges catch the early Eastern market, when top prices rule.

A parting word to the fruit-growers present: California grows the best fruits in the world, and the world is beginning to want them. Now, can not you, as growers and as intelligent men, get together in some kind of an organization and market your fruits, both green and dried, so as to make the business more profitable than it has been? Can not you make the umbrella large enough to take all the growers under its protection, and not leave thirty to forty per cent outside to cut your throats?

The address of Mr. Thomas was received and placed on file.

DISTRIBUTION OF FRUITS.

By A. H. NAFTZGER, of Los Angeles,
President and General Manager of the Southern California Citrus Fruit Exchange.

Probably in no other class of products from the soil has there been so great increase in volume in recent years as in fruit-growing. The shipments from California orchards alone have increased from 16,000 carloads in 1890 to more than 66,000 carloads in 1900—an increase of more than 400 per cent in ten years. The census reports are not yet complete, but the advance bulletins indicate a similar vast increase in fruit-growing in every part of the country. As for instance: Delaware shows a marked increase in everything except peaches, ranging from an increase of 40 per cent on cherry trees up to nearly 1400 per cent in prunes and plums. It is true that the plums and prunes in Delaware are still in limited quantity, although the increase was more than 7,000 bushels. During the same period, the increase in pears in that State was more than 130,000 bushels. Look at the comparative figures of the colder State of Connecticut. During the decade, the number of bearing apple trees increased nearly 50 per cent, cherry trees 60 per cent, peach trees 489 per cent, pear trees 43 per cent, plum and prune trees over 1200 per cent. Like in Delaware, some of these products are still in limited quantities, although the increase is marked.

Fruit-growing has been stimulated by the genius of the people in seeking new lines of profitable industry, but more particularly by the consumptive demand for fruit. The luxuries of a few years ago have become the necessaries of to-day. With a very large percentage of our population no breakfast, luncheon, or dinner table is complete without fruits in some form. There was a time when the delicious products of the tree and vine were sought by the rich to the remotest corners of the earth, even at great cost; but with the vast increase in production these fruits must seek markets, and not wait to be sought for. Notwithstanding the superiority of California fruits over most others on the globe, the vast increase in the industry in every direction causes the California grower to stop and inquire what of the future; where is he to find consumers, and how? The distribution of fruits is but another term for marketing, and I take it the committee so regarded it in assigning me the subject. Thousands of growers in California have found that they can overcome all difficulties, and grow the finest fruits the world has ever seen, but how to convert them into money at profitable figures is the ever present problem. From year to year they find they must have more consumers. These must be created. How to do this fast enough to keep pace with the increasing product is a question that will tax the skill of all the growers. That every pound of fruit grown in California could find a market profitable to the producer if properly brought to the attention of consumers there can be no doubt. I am not prepared to admit that we have reached the limit of profitable production, not to say anything about the so-called over-production. What we want is an orderly distribution of our fruit into the markets we have, and the education of consumers to require more of it. As I have said to this Convention before, people buy things because they see them, and because they are presented in an attractive form. After having spent a number of days at the recent Pan-American Exposition at Buffalo, I feel safe in saying that no exhibit drew more attention or created greater interest than that of California fruits, both fresh and cured. The beautiful display of dried and canned fruits was an unfailing attraction, and I have no doubt will bring thousands of new customers for these products. It will surely be so if like fruits are offered in the home markets where the people can see and buy them. Some method must be devised by which these cured fruits, prepared in the very best manner, can be put on exhibition, and sold in every city and village over the country. Thousands of people who seldom if ever buy California raisins, prunes, and other cured or fresh fruits, would become regular buyers and consumers of them if they were brought to their attention in attractive form, and at prices which would net the producers handsome profits. Furthermore, the people must be educated by making them acquainted with the delicious and health-giving qualities of these fruits. They must be brought to the notice of the house-wife, the steward, or the cook, as the case may be, day after day. As to the cured fruits, I would say that the plan of putting them up in small attractive packages ready for market is a most excellent one, provided the necessary machinery for distribution of them is put in motion. And every one of these small packages should be accompanied by some formulas for preparing for the table, or by some short crisp statement regarding the character of the fruit, its good qualities, etc. It may be necessary even to systematically carry these packages and sell them at the door-step.

It is perfectly evident that we can not depend upon a spontaneous demand; we must create one. Neither can we depend upon the usual channels of trade for the proper exploitation of the markets. Nobody except the man whose sweat and toil produced the fruit has enough vital interest in the product to push it constantly into consumption, unless he is paid for doing it. People in trade will devote their energies to the article that is easiest to sell, and the moment the demand for any particular article weakens, they turn their attention to something else, out of which a more ready profit can be obtained. There will follow a period in which the particular article neglected is not consumed in necessary quantities. We can not wait for people to buy our fruits as they buy flour, and meat, and shoes, simply of necessity. We must educate them to require our products all the time, because they have taste for them.

But you ask, how can all this be done? It involves vast detail and the expenditure of considerable money. It will surely be done, if it can be made to appear that it will pay; but the individual grower can not do it. He can not afford to do it on his own account, nor can he afford to employ agencies to carry his product and put it before the people in the way suggested. Paradoxical as it may seem, I will therefore say that the best way to distribute our fruits is to get them together. First, the interests of the many growers must be consolidated. If you have grown weary of the word coöperation, let us call it by that more modern term, "community interest."

It is true that the individual grower who packs his own product for market could place in every package some suitable advertising matter that would interest the consumer into whose hands it might fall, and probably have the effect to cause him to buy more of the same fruit, but even this form of advertising and of educating the buyers can be carried on much more systematically and successfully by the coöperation of the many. I have no doubt that the many thousand small packages of seeded raisins given away by the people of Fresno to visitors at the Pan-American Exposition will have the effect of making thousands of new customers for their seeded raisins. I do not pretend to be familiar with the method adopted for doing this work of distribution, but it probably fell so lightly upon the many parties at interest that no one felt the expense.

Last year the Southern California Fruit Exchange had printed half a million circulars setting forth the good qualities of the California lemon both for table and toilet; also, many formulas for the use of the lemon. These circulars were distributed by putting them into the boxes as they were packed for shipment. The cost of this to any one grower among the hundreds who bore the expense was so slight that it was a burden on no one.

These are but suggestions of the ways that could be employed for disseminating information and creating interest in the superior qualities of our fruits. Having aroused an interest, we must follow with supplies prime in quality and abundant in quantity. Not offering spasmodically; not waiting for the consumers to call on the retailers, and they in turn to go to their jobbers and demand these fruits; but we must see to it that they are always in their proper season in the hands of the jobbers, and if they are dilatory about it we must go past them to the retailers. If, however, there is a demand upon the part of consumers, jobbers will be very willing to handle them. It is difficult, if not impossible, to estimate the great damage and loss that will ensue if the interest in any of these fruits is permitted to lag during their proper season. People will not eat twice as many prunes in January because they did not eat any in December. In fact, if they are permitted to neglect prunes in December, and become accustomed to some substitute, it may take half or all of January to get them back to prunes. The work of advertising which I have suggested in the way of circulars, formulas, etc., must be supplemented by personal effort. I do not ignore, nor do I think I underestimate, the value of the ordinary channels of commerce through which any commodity is placed upon the market, but I am thoroughly convinced that these usual channels are not sufficient for our uses. As I have already stated, brokers, jobbers, retailers, and speculators, like the forces of nature, work along the lines of least resistance. In other words, they devote their attention to the thing easiest of accomplishment. Having no particular interest or investment in the production of fruit, they will deal with it precisely as with any other commodity. They will sell it when there is a demand for it, and neglect it as the demand weakens. As a consequence, any one or more of our fruits may at any time disappear from the markets for an indefinite period. Something else, or even nothing, may be substituted for it. This leads me to say that, in my judgment, if fruit-growing in California is to be permanently successful we must sell our products through agencies of our own. As President Bond, of the Cured Fruit Association, said in his annual report: "I would have the association sell its fruit through its own agents."

So thorough is my belief, gained by observation and experience, that this is of prime importance that I place it ahead of all other factors in the problem of distribution. If we want the work done we must go or send. Every other great business undertaking is exploited by personal and exclusive representation. Where is there another industry of so vast extent as fruit-growing in California that attempts to put its product on the market through agencies established for other purposes or with mixed interests? It has been stated upon the floor of this Convention that the fruit products of California have reached the enormous valuation of twenty-five millions of dollars in a single year. Will any grower attempt to maintain that this is not sufficient to justify the maintenance of the most thorough system of distribution? A very small percentage of this great sum would girdle the earth with the best talent obtainable and devoted solely to the introduction of California fruits.

This will separate the work of marketing from adverse influences; it will eliminate speculative features; it will establish permanent channels through which supplies reach the consumer; it will equalize distribution; it will reduce operating expenses; it will strengthen and steady prices. I have yet to hear what I deem a sound argument against this method. If you will excuse what may seem somewhat personal, I will say that the Southern California Fruit Exchange has its own offices in thirty of the principal cities of the United States. Salaried agents and assistants in these offices are constantly keeping our fruits before the attention of the jobbers in all of these cities and adjacent territory. In fact, by this method we cover every jobbing city in the United States and extend into Canada and Europe. Through these agencies, we are marketing half the citrus products of California satisfactorily to the growers, and to a large degree steadying the markets for the other half. These agencies are engaged exclusively and continuously in the sale of California fruits. They are not talking oranges to-day, bananas to-morrow, baking powder the next day, and so on, but are incessantly urging our own fruits upon the attention of the jobber and wholesaler, and if he should show indifference to them they go to the smaller and the country merchants with them. During the year since the last meeting of this Convention, we have sold through these agencies over 11,000 carloads of citrus fruits for nearly $9,000,000. In addition, we have sold for other coöperative organizations, some hundreds of carloads of California products. This we have done at a cost of but three per cent to the grower. We transacted this large business without the loss of a dollar from bad credits. Covering a period of five years and the sales of $22,000,000 worth of fruit, our total losses from bad credits have been less than one fortieth of one per cent. These facts and figures are cited to show you that the method I advocate is practicable, and can be carried into successful execution. It is not a dream. Pardon me for repeating what I have said frequently before in these conventions, that California fruit-growers ought, and as I believe must establish, control, and maintain their own agencies for the distribution of their products, kept free from the shifting influences of speculation. This must have for its sole purpose and object the interest and success of the individual grower. These agencies, dominated alone by and for the fruit-growers, must be the ever open doors through which the products of our orchards shall be borne in a steady but well-regulated stream into every market of the world. All of this can be done by a combination of all, with small cost to any. It can not be successfully accomplished without combination.

The address of Mr. Naftzger was received and placed on file.

OUTLOOK FOR THE PRUNE INDUSTRY.

By WILLIAM H. AIKEN, of Wrights.

From the standpoint of a prune-grower of twenty-five years' experience I can say that the outlook for the prune industry is good, with prospects of improvement. Let us first look back to the origin of the industry in Europe and trace its growth and development, so as to better understand its present importance and future prospects.

A thousand years ago, on their return from the Crusades, the Benedictine monks are said to have brought with them from Turkey or Persia what was then known as a date plum, and planted it in the garden of their abbey on the River Lot, in the vicinity of Bordeaux, France. Fortunately the soil and climate at that place were well adapted to the successful growth and fruitage of the tree, and fortunately, too, no other people of that time were as interested and skilled in the care and culture of fruits and flowers as the monks. From their abbey garden the trees were slowly transplanted to others, until in the course of centuries fruit gardens have dotted the hillsides and valleys of that part of France. True to its origin it has remained a garden tree, for there are, even to-day, no orchards in a commercial sense in Europe. The fruit became known in trade as Prune D'Ente, or Agen, the prune of commerce, and is the California French prune.

European Methods.—The European methods of growing, curing, and marketing prunes are much the same as they have been for centuries, and we think we have little of practical value to learn from them.

The trees are grown in France upon the plum root, in light, sandy, porous soils, rich in lime, but deficient in humus, and are trained high, with round tops, so as to let the sunshine in upon the ground to mature garden and field crops.

The prunes, when ripe, fall to the ground, and are picked up two or three times a week, and in wet weather every day. The fruit is placed on trays without dipping or grading, and baked in ovens with a temperature of about 158° F. When properly cured or baked, the prunes are offered in the market places and are bought by prune merchants, as usual, at their own prices.

The prunes are graded, processed, boxed, sacked, bottled, or cured, according to quality. The poorer grades are made into by-products, or distilled into brandy, without loss. This economy should be practiced by us.

In 1900 the French prune crop was about 100,000,000 pounds, and was sold at an average price of 4 cents per pound, all sizes, with little competition from California.

The German prune is raised in Germany for home consumption.

It seems that, commercially, the baked or cured prune is not held in as high esteem in Europe as formerly, the higher classes preferring preserved, canned, and bottled fruits and leaving the prune for the middle classes. This is said to be owing to the fact that the prune is not marketed, as a rule, in a neat, clean, attractive manner, except some of the fine, large grades that are sold, even here, at high prices. Much the same might be said of the prune business in this country. Some of our rich and well-to-do families live upon the ripe fruits and grapes of our orchards and vineyards in season, and out of season are supplied from refrigerators, and are not sufficiently attracted to our cured fruits to purchase very freely of them.

The Pacific Northwest.—We have an American competitor in the markets of this country, worthy of consideration in fixing prices on California prunes.

The States of Oregon, Washington, and Idaho have some 50,000 acres planted to prunes—2,500 acres to French, and the remainder mainly to Italian or Fellenberg.

The soil and climate of these States are not specially adapted to the successful culture and fruitage of either of these trees, and our enterprising neighbors are now seeking for a hardy and more prolific prune tree, the fruit of which will better stand their frost and rainfall.

California.—The outlook for all Pacific Coast industries is good, with prospect of future development and profit.

The American invasion of the Pacific islands and countries will establish a peaceful commercial supremacy and make profitable markets for our surplus fruit and other food products.

The United States canal will enable us to compete in the markets of Europe and carry the prune war even into France.

In times of peace and practical exclusion from the markets of the world, the California prune-growers have planted, watered, and cultivated, and have in hand to-day one of the greatest, and probably the most profitable, of the industries of the State, and one that is capable of extension and improvement according to the demand for prunes in the markets of the world.

It is not advisable, however, to increase the prune acreage of the State very much until all these things come to pass.

The prune industry of California is only, commercially, thirty years old, and has experienced the fate of other industries in its rewards and losses.

Comparing former with present prices, some may conclude that prune-growing in California does not pay as well as it did in early years, and complain that they can not get more than one half the prices they formerly did. We must not fail to take into consideration the important fact that the purchasing power of the money we now receive has doubled in the past thirty years. For instance, we now pay for clothes, shoes, sugar, kerosene, tinware, hardware, and furniture for our homes and steel products for the farms, substantially only one half what we paid when we started in business some thirty years ago. The wages of labor, however, have kept up to a high standard, making our enterprise profitable at least to the hired man who has proved himself worthy of his hire.

THE CHEMICAL COMPOSITION OF PRUNES.—The Agricultural Department at Washington, D. C., has analyzed prunes grown in France and Oregon, and the State University has analyzed the prune grown in California, so that I am able to submit to you a comparative scientific test of sugar and fruity quality in the prunes of those countries:

Variety.	Number per Pound.	Percentage.			
		Flesh.	Pits.	Acid.	Sugar.
French (Imported)	50	87.8	12.2	.56	41.56
French (Oregon)	128	78	22	1.51	35.15
French (California)	45	88	12	------	55
Italian (Oregon)	38	87.6	12.4	1.51	35.18

The California prune, though raised by me in the Santa Cruz Mountains, in Santa Cruz County, may be considered a Santa Clara prune in quality, as the trade pays the same for it. The record shows that the California prune is superior to any other in sugar, which is the standard of excellence, indicating rich, fruity quality, and, further, that the French and Italian prunes grown in Oregon have the same acid and sugar.

Californians, don't get discouraged, but, believing that you can produce the best prune on earth, do it bravely and well.

Raise and sell sound, ripe, well-cured prunes that will command full value, and that can be sold by the merchant at a profit and eaten by the consumer with a relish.

Stand up for your State, county, home, and business, and make your product a luxury and a necessary of life, thus becoming benefactors of yourselves and mankind.

The address of Mr. Aiken was received and placed on file.

DISTRIBUTION OF CALIFORNIA CANNED AND DRIED FRUITS.

By ISIDOR JACOBS, of San Francisco,
Of the California Canneries Company.

The proper distribution of California canned and dried fruits in the various markets of the world depends very largely on demand, methods, men, tariffs, quality, and transportation. All of these are the result of concentration of thought and effort, and are dependent on the man or men employed. Much, too, depends upon the opening up of new markets and new customers for our products, keeping those markets we already have, and increasing the trade wherever possible.

The distribution of goods must be confided to men who can concentrate their thoughts on the proper disposal of goods for the best interests of the manufacture in canned fruits, and the best interests of the producer in the sale of dried fruits, including raisins. The avenue chosen for the disposal of California canned and dried fruits should be entirely free from speculation of any kind or nature. A commission dealer interested in the articles he handles, or similar articles, excepting so far as relates to his commission, can not do justice to his principal, no matter how good his intentions might be. The men chosen to handle this most important part of the work must be free from any entanglements that will prevent their doing their very best for their principals.

Manipulation in these lines, by parties who are expected to look after the distribution of the products, is largely responsible for the conditions existing, and until both canned fruits and dried fruits are handled in the most direct way, the business will never be the success that it should be, or on a firm and solid footing. In canned fruits, with ample capital, any amount of these goods can be manufactured, and they should be packed with the greatest possible care as to quality and grading; but the most important thing is to dispose of them at a profit to the manufacturer, and in a way to accomplish the best results with a view toward increasing the trade. This requires effort and concentrated thought, and the failure to dispose of the goods promptly and on a profitable basis causes the lack of success.

Quality and grading aid materially in the disposal of these goods, but unless the quality is maintained, the trade will drift away very quickly. To make a complete success of the fruit-canning trade, the goods should be disposed of by men who can devote their thoughts to the disposal of the goods on the most direct basis, and, at the same time maintain, undisturbed, amicable relations between the principals and their customers. In order to succeed in this, good faith must be exercised on both sides, and it is injudicious and injurious to the future of the trade if quality is not maintained, or the markets are overloaded to the detriment of the trade, resulting in dissatisfaction to buyers, and thus injuring future prospects of the seller.

In dried fruits—particularly raisins and prunes—the same rule will apply. The difficulty in these lines seems to be almost entirely in the methods of the disposal of the crops. The crops are ample, but they are not distributed and sold as fast as they should be. The cause of the difficulty is in the distribution and sale. The opening up of new markets, and the securing of new customers, do not keep pace with the increasing production. The difficulty is not over-production, but rather under-consumption. Many of the producers, instead of standing together, are allowing themselves to continually come under influences that are diametrically opposed to their best interests. If they could only look at this matter from the standpoint of what is best for all concerned, their efforts would result in success.

Present conditions in the disposal of these products have been brought about by the fear of active competition of commission merchants (so called), who are not only commission merchants, but also brokers, dealers, speculators, and, in many instances, packers.

One of the causes of lack of success is handling goods through agents who are interested in other lines of products, for they are bound to devote their attention to those goods which are easiest disposed of, and on which, therefore, they can easiest earn their brokerage and commission, to the consequent neglect of other lines which require determination and push to dispose of them. Systematic methods of advertising and permanent exhibits will also have to be adopted, for the products must be brought in a more direct way to the attention of the consumers. The opening up of new markets in foreign lands is, of necessity, slow growth, and must be undertaken in a very careful way. The foreign trade is not worth cultivating unless it is to be a permanent one; therefore, the man or the concern desiring to go into this market should see to it that when once in the field he has a sure prospect of remaining there. The main consideration is to supply a standard quality of goods. Strict honesty is absolutely essential. Everything sold must be as represented. To send high-grade goods at the beginning and then to let the quality drop is worse than folly. It is a good form of business suicide. The foreign buyer is generally a shrewd judge of values, and it is impossible to deceive him more than once. It is highly essential that the manufacturer and producer should not remain content with merely filling the orders that come in, but he should cultivate and enlarge the opportunities that are now his. When he is fairly established he may be reasonably sure of holding his trade, for the foreign customer is conservative, and strong inducements must be offered him to cause a change when once he has formed a habit of buying certain grades and qualities.

One of the causes that is preventing the increase in the distribution of California canned fruits is the fact that a considerable percentage of inferior grades is turned out bearing attractive labels with the word "California" on them. Consumers purchase these goods as California canned fruits, and finding them of poor quality, and not knowing that the goods they used were below the average quality of California canned fruits, they stop using them, thus injuring the industry very materially. The remedy for this is to have fewer grades, and have the cans of seconds and inferior grades plainly stamped with *the* quality contained. It seems ridiculous and inconsistent for California canners to jealously guard the name "California," and to protect its use by enjoining Eastern packers from putting goods on the market bearing the name "California," while, at the same time, they are turning out goods, grading them as seconds and water, on which attractive labels are placed with the word "California" prominently displayed, but with no indication on the label of any inferiority of the goods contained therein. The strange thing about this is that on these inferior grades there is no margin of profit for the canner. These methods have already interfered with the natural increase in trade in these goods, and unless some steps are taken to remedy the evils resultant from these methods, no considerable future increase in the distribution need be anticipated.

The tariff is a subject that is allied very closely to the distribution of California canned and dried fruits, and in this regard there is a great variety of opinion—also a diversity of opinion. The distribution of California canned fruits in foreign countries would be materially increased if the tariff into those countries could be reasonably reduced. In Germany, France, and nearly all European countries, excepting England, the tariff is very high—in Germany, amounting to nearly 30 cents per can, which is more than the selling price of the goods—being almost prohibitory. The reduction in the tariff on dried fruits into Germany resulted in an enormous increase in the trade in California dried fruits. What was done with dried fruits could be done with canned fruits.

Even though we do not favor reciprocity treaties, why should we be so blind to our own interests as not to make united efforts to obtain some concessions in our favor, if it is to be the policy of the administration to adopt these treaties. We do not know that in these reciprocity treaties the interests of great corporations are sufficiently strong to obtain favorable results. California is, in these negotiations, considered only as a very small part of the country.

A committee of the Home Market Club of Boston recently reported as follows: "Among the most gratifying conditions of the times, which are attended with so much prosperity at home, is the fact that we have already extended our trade abroad and have secured so large a place in the markets of the world. The time is auspicious for continuing and completing the conquest. It must go on without delay and must be thorough and permanent. To that end every step must be wise, successful, unretreating, and must command and retain the confidence and approbation of the American people. We must injure no existing American industry. We respectfully request Congress, therefore, to collect without delay, from every available source, full and exact information as to the effect of all proposed treaties upon industries now successfully established, so that none may be sacrified, and in that way whatever may be accomplished shall be both beneficial and enduring."

For some years past it has been urged and advocated that a permanent California Bureau at Washington, D. C., be established, so that a direct representative of this State would be in continual touch with the different National departments, particularly during the interim between one session of Congress and the other. Such a representative could not only insist that the interests of California should be protected in these reciprocity treaties, by asking for lower rates on such of our products and manufactures as could be benefited by them, but at the same time protect California's interests by seeing that the tariff into this country is not reduced on such articles on which low tariffs would tend to injure the sale thereof. Such a representative would gather valuable statistics and be prepared at all times with the necessary arguments to show our requirements on both sides of the question.

At a recent meeting of the Chamber of Commerce, in this city, Mr. Wm. M. Bunker was chosen as special representative to permanently represent the interests of the chamber at Washington. No doubt he will look after reciprocity matters, questions of tariffs, interstate commerce, and other subjects of legislation, so far as they affect the interests of this State.

Not the least feature in the distribution of California canned and dried fruits is transportation facilities, and the future holds out brilliant promise in this regard. New lines of steamships, the promise of the Nicaragua Canal, and new lines of railroads, mean new territory to be opened up. At the present time it is hard to say what effect the amalgamation of the different lines of railroads may have on the future of this State's products. Certainly such amalgamation ought to result in better facilities for moving the products to their markets, and it would almost seem that unity of interest should result in the manufacturer and producer seeking new markets, and the transportation companies opening up new and vast sections to the traders of this Coast.

In this regard, the interests of shippers and transportation companies are identical. The transportation companies should name such rates as will result in opening up new markets for our packers and producers and enable them to hold those markets that they already have. They must also recognize the necessity for more rapid transit of the products to market, and in every way possible improve general transportation facilities.

A factor that may be relied upon to help enlarge our trade abroad is the tendency that is showing itself in the way of restoring our supremacy as a nation of shipowners. It is undoubtedly true that trade follows the flag. Even though it be shown that the establishment of foreign trade does not depend necessarily upon the carrying of goods in our own vessels, still it is undoubtedly true that the flag helps materially.

New transportation facilities to Vladivostok and the vast Asiatic Siberian country will afford us in the near future great possibilities in the way of distribution of our products.

Methods in the successful distribution of California canned and dried fruits depend largely on the men who direct them. Only men of the widest experience and energetic force should be chosen, and at the head of each enterprise should be one man who can sit quietly in his office and devise the proper methods and see that they are properly carried out by those chosen to do the work. He must not be under the influence of excitement or other disadvantageous circumstances, but be able to consider carefully the methods necessary to make a complete success of the enterprise.

Dr. Thwing, President of the Western Reserve College of Ohio, in a lecture delivered in this city some months ago, said that Mr. Rockefeller told him that one of his greatest difficulties was to find men to whom he could pay $25,000 per year salary to do some of his thinking for him.

Men are required who can accomplish something—men of force, men with concentrated energy, men who have a definite purpose and who know how to execute it with their entire strength. The need is for men who can produce results—men possessing tact, practical ability, and executive force.

The men who would keep abreast of the ever increasing tide of progress in trade must not rest satisfied with the business methods that brought success years ago. They must keep their business up to the standard by the constant infusion of new ideas and improved methods. No man can afford to rest content with bringing his business up to a certain point—he must ever be reaching out beyond that point.

In reference to the causes that prevent the natural increase in consumption and distribution of California canned fruits, it appears that the responsibility rests on the fruit-canners themselves by the pursuing of a shortsighted policy, which is resulting in holding the business in check and retarding an industry which should progress and increase throughout the world. Strict honesty to the consumer alone can accomplish this object. Either inferior grades should not be put out at all under a label bearing the word "California," or the label should state exactly the quality of the goods, so that the purchasers may know what they are buying and the consumers what they are getting. California canned fruits in former years acquired their great reputation throughout the world entirely because the quality turned out under the name "California" was superior and in heavy syrup. This has been changed by the methods adopted in late years, and to-day considerable goods are turned out under the name "California" that will rank inferior to many Eastern packs—a practice that is destroying, with many consumers, the prestige and popularity that California canned fruits formerly enjoyed in the world's various markets.

In raisins and dried fruits, the distribution must be carried on in the most direct way and without fear of antagonizing any of the elements that stand in the way of progress and increase of trade. The prune and raisin men must not be discouraged at their present seeming failures to make a success of their associations. If we examine the paths of almost any business success, we will find it paved with failures; in fact, in many cases, failures have been the guides that pointed the way to success. The lessons they taught, the suggestions they gave, showed the way to win. As the poet Moore has well said:

"'Tis the coward who stops at misfortune—
  'Tis the knave who changes each day—
'Tis the fool who wins half the battle,
  Then throws all his chances away.

There's little in life but labor,
  And to-morrow may prove but a dream—
Success is the bride of Endeavor,
  And luck but a meteor's gleam."

The address of Mr. Jacobs was received and placed on file.

DISCUSSION ON FRUIT DISTRIBUTION.

MR. NAFTZGER. The questions that have been presented to this Convention are now, I believe, open for discussion. I feel like saying "Thank you" to Mr. Jacobs for saying what I did not venture to say. I thought while he was reading his paper that it might be suspected that there was more or less of a conspiracy between him and me upon this subject of agencies, but I assure you that I have not seen Mr. Jacobs since I heard him read a paper in this Convention at its last meeting; so there is no conspiracy, only he is right and I followed in his light. I say that I thank him for saying a little more on the same lines than I had ventured to say myself. At several sessions of this Convention I raised more or less discussion and I think was misunderstood; I got some very severe criticisms—not, perhaps, from any of the fruit-growers, but I got it from some of the newspapers with whom we do not advertise. I have no disposition now to say "I told you so." I cheerfully emphasize and indorse everything that Mr. Jacobs said, which was decidedly on the same lines, more pointedly though, with the matter contained in my paper. When he says that the fruit-growers of California can not depend upon the packers and speculators to market their products, he tells the truth. That is the root of the difficulty which confronts certain fruit-growers of California to-day.

A MEMBER. You might have added the packers.

MR. NAFTZGER. Well, they are speculators. A prune-grower said to me on this floor to-day that fully one half or more of all the prune-growers of the Santa Clara Valley are tied up with crop mortgages of the speculator. I have no doubt it is true, because Judge Aiken told me so. He said it was for this reason that the growers did not get anything out of their crops, and were obliged to have money. Now, where did the other fellows get the money? Did you ever think of that? Did you ever stop to inquire where the packer and the speculator got the money to lend? They got it out of the grower; the wrong man has the money; that is the trouble. The man who has expended his energy, has grown up with the trees, and grown gray under the trees—the man who has spent his toil, and energy, and life trying to make a crop, is not the man who has the money, but he is the man who has got the mortgage on his farm.

One of the directors of the Cured Fruit Association told me that there was an increase of eighteen per cent in sizing and the dipping of the prunes. I don't know whether that is correct, but one of the directors of the Cured Fruit Association told me so. He said there was eighteen per cent gained in sizing and dipping, and I understand there is also eight to ten per cent difference in the selling. Thus, I say, I emphasize what Mr. Jacobs said on that point. I don't say a word in disparagement of these people. I have declared on this floor repeatedly in Conventions past that we have no imputations of dishonor for the packer or the speculator. He is here because the grower gave him a reason to be here, and he will always be present when there is something to be speculated upon. I am telling the fruit-grower, and what I mean to emphasize to the grower is, that until you learn to do your own business you may expect to have the mortgages on your property.

Mr. Jacobs said, and truthfully too, that the avenues and channels of distribution are inadequate, and that we need more consumers, and that we are not properly reaching the markets through these shifting ways that are alive to our interests to-day and to some other interests to-morrow. I say again, what I have repeatedly said before, that when this vast interest of fruit in California, one of the largest interests of the State—one of the very largest of all the products of California, as Mr. Berwick stated this morning, running to probably $25,000,000 annually—when this vast product gets ready to do business on its own account it will do business profitably to its growers and to its owners. But fruit-growers are afraid of expense. They don't seem to think that they are paying the expenses, a small portion of which would insure better methods; but they are enriching and preparing the other fellow to get a mortgage on their property. Now, there *is* some expense attached to this work; but look at the product upon which you have to exploit the markets and establish your agencies. I stated to you in my address that what I have done down South in a small way is but a beginning of what California growers can do when they take hold all together. As Mr. Thomas said, "When you make the umbrella big enough for us all."

In our association to-day we have a payroll of $7,000 a month; yes, it will take more than that—probably $300 a day for the working days—to pay our employés. Why, we have a telegraph bill of $100 a day, and it takes a carload of fruit every day to pay our expenses, but we are selling hundreds of other cars, and at the same time after all is said and done we do our business on less than one half the expense that has ever been attached to any fruit-marketing that I am aware of.

This is only the beginning of what can be done by the California fruit-growers when they all coöperate and do business in the proper way.

MR. BERWICK. After the Convention closed this morning I was called to order by a statistician. He said the figures quoted by you are entirely to small, and makes the *increase* $35,000,000 over the period of ten years since. It was an increase of $35,000,000 annually since 1890. I judge we are not all fruit-growers here; sometimes we have commission men with us when we are talking about the marketing of fruits; but I wish to say that a serious thing happened to the fruit-grower this year. We have been paying constantly in San Francisco eight per cent commission on goods sold for us here. That is what you all had to pay in the past; this year it was arbitrarily raised to ten per cent commission on goods sold in San Francisco. I wrote to my commission man for the reason of this increase, and the reply was, "It is common all over the Union; the ordinary charge is ten per cent, and this thing has been coming for some time now." That is the only reason I got. If there is a commission man here I would like to know why you have been forfeiting two per cent of what was your money before. If you sell a box of oranges for $2 they charge you a commission not only on your freight and cost of packing, your boxes and paper and those things, but also on their own commission. They charge you the full ten per cent on the gross, and your box of oranges pays twenty per cent commission. They have charged you two cents to pay a commission on their own commission. Do you see the point? You pay commission on the whole thing, including the commission man's commission. That strikes me as rather hard on the grower.

MR. AIKEN. Some time ago we established in the East an agency for green fruit. The commission was eight per cent, and we made them return one per cent of it, which they did, and that proved that they could do it for seven if they wanted to. We made them the offer that we would give them the business for seven per cent and give the growers the one per cent.

Now, as to the Eastern grape-shipping business, I think it is seven per cent we pay, and the business this year has been very profitable, I think, to shippers generally, varying of course with small crops. I had occasion to visit the Eastern states and cities this year, looking a little after the fruit industry and the selling of grapes, and I found the business well done there. The object was to display California fruit in the auction-rooms so that the bidders could examine the quality and come to a fair judgment of what it was worth; and it was observable in attending the auction-rooms that where there was real merit in the product there was some competition among the buyers and the price would move up. But maybe a large quantity of those shipments would be a little off in quality, and such shipments would be kind of divided among them; but there was no spirited bidding outside of the articles that showed real merit on the face of them. I want to say to people who ship plums and grapes that they should pack them with honesty and integrity. Try and have every box perfect—not only for this year alone, but for all the years you are in the business.

I have observed that the brand honestly established in the Eastern market will sell any quantity of fruit at a paying price; so it comes back with force upon the grower to be very honest and careful in the selection, packing, and preparation of his fruit for the market. I say, from my observations in the East, that an article showing real merit upon its face does not go begging for purchasers, but brings good returns that pay all charges and expenses, and returns double what is received in San Francisco. I have a very large line of shipments of table grapes. I have realized, after paying every commission, over $100 per ton, but it is because I have established my brand for that kind of fruit. Those who have shipped to the San Francisco markets have said that they only received twenty-five per cent of that amount, and have paid ten per cent commission out of that.

MR. SPRAGUE. Now as to the condition of the San Francisco and Coast markets—they must be treated as one market. Of course those men who sell your goods will get all they can; we may expect them to do that; and it should be our business to see that we so organize our work that they can not get more than is fair for them to get. All we ask is for these Sacramento Valley growers to get together with us in the South, and then we ought to do something.

MR. MOTHERAL. I think the Raisin-Growers' Association of Fresno and Kings counties and of the State of California is in a better condition to-day than it ever has been. I believe we are in a position to control, and will commence next year by controlling three fourths of the raisins of the State. We are all beginning to be convinced of what you have heard here before—that coöperation is the only way. We have got to do business from start to finish; we can not afford to have a lot of fellows on the outside doing part of our business and we doing the other part. We have got to have an agency by which we ourselves can sell our fruits in the markets of the world; we will have to pack and sell our own goods. I think that will be done next year, and I believe this: that when we accomplish that we will not have any more trouble.

MR. JACOBS. I feel as if I would like to return the compliment to Mr. Naftzger. The most important problem confronting the fruit-growers of California to-day is the coöperation of the producers. I feel almost as if I had already seen what I wrote in my paper, for Mr. Naftzger and I both touched upon the same subject in the same way. But as he said, I have not had the pleasure of seeing him since a year ago at the Convention here. I believe one of our greatest difficulties, and one that is the foundation of all our troubles, is the question of fear that has been in the minds of our growers in this part of the State. They have started in from the wrong standpoint, because they fear active competition from people who have interests opposed to theirs.

In speaking of commission merchants and speculators, which, of course, includes packers, it does not necessarily follow that we have anything against them except as to the methods adopted and the results to the producer. Having grown up in connection with the fruit interests of this State, I believe and know, as we all do, that the future prosperity of California depends upon the prosperity of the producer.

The strange thing to me is that the people interested in growing prunes and raisins, and the manufacturing and packing of dried fruits, have not seen that when an association, such as Mr. Naftzger is at the head of, has made such a success in the disposition of the orange, which is a perishable product, how much more possible it would be to make a success with raisins, prunes, and other dried fruits. But they have gone on from year to year, the conventions meet and the same subjects come up in different forms, and there always seems to be the fear that if they antagonize the elements that have been distributing these goods they are going to be hurt, and they sit down and permit the same state of affairs to go on.

We are not over-producing, but we are not taking the right methods of disposing of our products; we are not getting the right men at the head of our organizations. Much of the success of California depends upon the men who will make a success of these organizations.

MR. BERWICK. I move that this Convention protests against the arbitrary advance of two per cent commission by the commission men of San Francisco on the sale of California fruits.

MR. SPRAGUE. I move to amend by suggesting that a committee of three be appointed to investigate the matter and report to this Convention.

Motion carried.

President COOPER appointed the following committee: A. R. Sprague, F. M. Righter, and Chauncey Gaines.

PROF. CHILDS. Mr. President, I wish to make a few remarks on one of the paragraphs in Mr. Aiken's speech in regard to the prune industry of the Santa Clara Valley. During the past four or five years we have had several dry seasons, and even last year, with a very large crop, Santa Clara did not produce one half of the entire prune crop. It is very likely that we will now have some wet and warm seasons, and the valley will produce more prunes than we will be able to market in one year. Our people are studying the conditions, and many of them are doing what we had better do all over the State. A great deal of the fertility of the soil is used in producing limbs and pits. Many of our best orchardists are taking out every other tree, and last year I know of one orchardist who had three times the number of prunes to the acre than when all the trees had stood, and much better prunes at that, and it costs less to take care of an orchard with one half the number of trees. I believe that the best thing that could happen in the prune industry would be to take out one half of the prune trees in this manner.

MR. AIKEN. By coöperation, my friend Naftzger has made a great success of things in Southern California. In San José it is said we failed in the Cured Fruit Association; but we didn't; there is a little misunderstanding about that association. The association never intended to sell fruit; it was not organized for that purpose; it was evidently organized to give the fruit crop to the packer for sale, and let him take the money for it. So far, the fruit has been sold; but one misfortune was that the packers who received their allotments owned too many cars in the East for them to sell them in the time they agreed to, and they have been thrown back upon the association. The association has been trying, in the markets of the world in the past year, to sell those prunes and distribute the money among the growers, and it is trying to do so now.

MR. JACOBS. Mr. Aiken said that the trouble was the packer has been compelled to throw back his cars upon the producer because he could not sell them, and the reason the packers could not sell the amounts allotted them was because the grower was depending on the packer, and the packer depending on the agents, and the agents on the packer, and by the time the wholesaler got the crop there were so many commissions that he could not devote his time to it on account of the commissions having been cut up so much that there was not enough in it for him to devote his time to it. The whole thing lies in the method of distributing the fruit, and until that matter is settled the fruit-grower will be the sufferer.

MR. RIGHTER. Some years ago a man came from this city to San José who said he would teach us something. I asked him if it would make any difference in the number of cars of fruit you sell, whether you give these growers $20 or $30? And he said, "Not a bit of difference." He said, "If you fellows stand together you can get $30 as well as $20." The expense of selling our fruit through the commission men as we now do costs us $10 where it costs the Southern California Fruit Exchange $1 for the same service. You must have good men at the head of the business in disposing of your products, and if you believe you can get along with a cheap man you are going to fail. Mr. Carnegie said, "It pays you to hire a man who can earn for you one million dollars at a salary of half a million," and it will pay the fruit-grower to hire men of ability to conduct the selling of their fruits. And I believe it is your selfishness that prevents you from taking hold of your own business.

PRESIDENT COOPER. Reports of committees are now in order.

REPORT OF COMMITTEE ON FRUIT PACKAGES.

The Committee on Fruit Packages submitted the following report:

To the Chairman and Members of the State Fruit-Growers' Convention:

Your Committee on Fruit Packages, appointed at the last annual Fruit-Growers' Convention, respectfully submits the following report:

Your committee will confine its remarks to packages for cured fruits for domestic and foreign shipment.

It is very generally conceded that the 25- and 50-pound boxes meet the approval of about nine tenths of all the packers and buyers of cured fruits; hence, we recommend the adoption of a standard package of the following dimensions for the packing of cured fruits when ready for shipment:

The inside measurements of a standard 25-pound box should be 5¾x9x15⅛ inches. The top, bottom, and sides should be made of 5/16 stuff for domestic use and not less than ⅜ stuff for export.

The inside measurements of a 50-pound box should be 9⅜x10⅞x15⅛ inches. The top, bottom, and sides should be not less than ⅜ of an inch thick, but consider ½ inch stuff preferable.

Packages for export trade should be made of heavier material than those for domestic use, and the 50-pound package should be proportionately stronger than the 25-pound package.

The wishes of the foreign buyer should be studied, and to that end use a 12½ kilo (27½ lbs.) instead of a 25-pound box, and a 27½ kilo (55 lbs.) instead of a 50-pound box, for French and German shipments of California cured fruits, other than evaporated apples. These have been packed for years in 50-pound boxes throughout the Eastern States, from which point Europe has heretofore drawn her supplies, hence, this style of package is used here.

The committee would recommend for general use the nailed box in preference to the dovetailed box, the nailed box being less expensive, and when properly nailed makes a stronger package and can be shipped from the box factory to the packing-house in shook, which is the most convenient and economical form of shipping box material.

The 80-pound box now in use by some packers should be discarded from the list of standard packages. Complaints from receivers of California cured fruits in foreign countries regarding broken packages and loss of fruit, generally arise from insufficient nailing and careless packing in boxes made of light material.

If the sides of the box are of sufficient thickness to permit the nailing of the top and bottom to the sides along the edges and the box packed solid with fruit, you will have a package sufficiently strong to withstand the average hardships of transportation, and one that will overcome the complaint of foreign receivers regarding broken packages. The manner of pressing the fruit into the box is largely responsible for broken packages, particularly the 50-pound package.

Packers of cured fruits, prunes, etc., for shipment to foreign countries should exercise special care and not subject the fruit to too great a pressure, crushing the fruit into the box in such a manner as to prevent it from springing back and completely filling the box after the cover has been nailed on.

Packages with a vacant space between the fruit and the cover are easily crushed by the rope sling used in loading and unloading steamers and other vessels or when stepped on by careless people. To overcome the danger of broken and crushed packages, packers should use "followers" in their presses of a thickness that when the press is down the bottom of the "follower" will be on an exact level with the top of the box. Naturally when the pressure is removed the fruit will swell and spring back a little against the cover, and this will fill the box solid with fruit.

Quotations on cured fruits to foreign buyers are made c. i. f.; or, in other words, the price named covers cost, freight, and insurance. Competition between local packers is keen, and foreign buyers hesitate to pay anything extra for a strong package or extra freight on the same; hence, the difficulty in adopting a standard package for export trade, one having sufficient strength to withstand all the phases of transportation to foreign countries.

Your committee is of the opinion that a standard package for cured fruits would certainly prove not only desirable, but also profitable to growers, packers, and shippers, and particularly would this be the case with the box manufacturers. Packers readily understand why it is that the box factories are unable to make prompt shipment of shooks during the busy season. Packers, as a rule, anticipate their wants in the way of box material and order in advance, but are not always far-seeing enough to be prepared to meet the rush of orders during the busy season and must rely on the box factories filling their orders with as little delay as possible. With boxes, as with labels, the orders must be filled in their turn, and frequently the delays are not only very annoying, but also costly.

Box factories are unable to cut and accumulate box material during the dull season, owing to the fact that nearly every packer uses a different size or style of package. The multiplicity of styles and sizes results in a great deal of confusion, although all aim at the same result—a package to hold 25 or 50 pounds of cured fruit; hence, your committee can see no reason why an effort should not be made to adopt a standard package of uniform size.

The dimensions of the material used in manufacturing a standard 25-pound package are as follows: 2 ends, ⅝ x 5¾ x 9 inches; 2 sides, 5/16 x 5¾ x 16⅜ inches; top and bottom, 5/16 x 9⅝ x 16⅜ inches. These measurements apply to package for domestic use. Same measurements for the 25-pound export package, except that the sides should be of ⅜-inch stuff. Material cut as above will make a package measuring on the inside 5¾ x 9 x 15⅛ inches.

The 50-pound package for domestic use measures on the inside 9¾ x 10⅞ x 15⅛ inches; ends should be ⅝ x 9¾ x 10⅞ inches; sides, ⅜ x 9¾ x 16⅜ inches; top and bottom, 5/16 x 11½ x 16⅜ inches.

The 50-pound domestic and export prune package should measure inside 9¾ x 9¾ x 15⅛ inches; ends, ⅝ x 9¾ x 9¾ inches; sides, ⅜ x 9¾ x 16⅜ inches; top and bottom, 5/16 x 10½ x 16⅜ inches. This package would be stronger and more desirable if ⅜-inch stuff was used for making top and bottom.

Your committee is of the opinion that California cured fruits, properly packed in 25- and 50-pound boxes, will in the long run give better satisfaction to all parties interested.

We will here mention the fact that very many Chicago buyers, as well as buyers west of that market, desire cured fruits packed in sacks. This, in our opinion, is not the most desirable way in which to pack and ship California cured fruit.

The attention of the members of the Convention is called to the following comments of Professor Edward R. Lake in his article on "Prunes in Western Europe," which, in our judgment, thoroughly covers the matter of careless packing and the use of poor, rough, odd size packages. Professor Lake says:

"The most neglected phase of the prune industry is that of packing and packages. In the marketing of no other fruit or food product, save possibly the coarser vegetables, is so little attention paid to attractive packing and packages. Not less than four fifths of the product is put upon the market in large, rough boxes or bags, and especially is this the case with the smaller sizes of the European prunes and those from the Pacific Northwest. A few of the larger packing establishments of France, Germany, and California use a moderate amount of taste and a fair quality of material in their packages, while one or two French and German firms put upon the market a limited amount of very fancy packages of choice fruit.

"On the markets of eastern United States and Europe prunes are usually handled like peanuts and potatoes. Instead of being handled as a prepared fruit food, they are treated as a raw article; exposed to the flying dust and dirt of the market place; shoveled and carted about just as one might handle coal, in old boxes, barrels, sacks, or trays. The result is that as the housewife passes from place to place making her purchases for the table the thought of dried prunes for sauce gives her a feeling of mild disgust, and justly so. If the average curer of prunes on the Pacific Coast could see the article as it is commonly marketed in the large cities, he would feel distrustful of his own senses.

"Not all of the evaporated fruit is thus handled, but a large amount reaches the consumer in this way. Not alone the smaller grades, though certainly a larger per cent of these are thus sold than of the fancy grades, but some of the fruit of 40–50 grade is sold with so much dirt upon it that the work of preparing it for the table must be as great as for potatoes. This condition can only be overcome by adopting a style of package that will not permit handlers and dealers to foul the fruit.

"There appears to be no reason why this product under ordinary conditions, providing it is protected from attack by insects, will not keep for two or three years without serious deterioration. Certainly there is no reason why it should not be placed on the market in such manner as to make it as attractive as the canned product, which is the chief competing article. While it is possible that much of the evaporated product is of too low a grade and quality to warrant even a small additional expense for fancy packing, yet for all the higher grades and best qualities it would appear that this is a field worthy of thorough investigation by the progressive packer and shipper. In the world's markets of to-day attractive packages count for at least as much as quality with the majority of buyers, and since dried prunes are looked upon by many as a coarse food, it is the more important that careful attention be given to their market appearance. The glass jars, bottles, and cans in which some of the Bordeaux packers put up a portion of their fancy quality prunes are too expensive for the general market, and yet, thus far, these are the only packages in which the fruit keeps for an indefinite period without decreasing in value through being worm-eaten and sugared. The great need at present is a cheap, light, fly- and air-proof package."

B. N. ROWLEY,
A. J. HECHTMAN,
A. G. FREEMAN,
R. W. HERSEY,
W. M. GRIFFIN,
Committee on Fruit Packages.

Upon motion, the report was adopted.

The Convention then adjourned until 9:30 o'clock Wednesday morning.

PROCEEDINGS OF SECOND DAY.

WEDNESDAY, December 4, 1901.

President COOPER announced that the matter of the consular service was laid over yesterday for the purpose of hearing Mr. Goodwin this morning, but Mr. Goodwin not being present, the following business was proceeded with:

MR. RIGHTER. I have in mind that the President of the United States has written a message to Congress, in which he has recommended a great many things for this Coast, in all of which we are deeply interested, and now I move that the President of this Convention appoint a committee to draught suitable resolutions to that effect.

PRESIDENT COOPER. I would say, in that regard, that the province of this Convention is only to discuss and take up questions which concern the fruit industry of the State of California, and that the best plan—in fact, the only plan—of properly bringing that question before the fruit-growers would be to appoint a committee to take that matter in charge and to bring a resolution before this Convention touching upon only those subjects in the message which concern the fruit-growers. There are only two or three of those questions. One is irrigation and forestry, and another is the oceanic canal. There may be others also.

MR. RIGHTER. Consular service also.

PRESIDENT COOPER. Yes, those are three things that may come before this Convention. You should separate those things, and make it understood that this Convention meets only for the purpose of advancing the interests of the fruit-growers.

MR. MOTHERAL. I move that a committee be appointed to report to this Convention covering those matters.

Motion carried.

DISCUSSION ON CONSULAR SERVICE.

MR. ADAMS. There are certain things that can be had from consular service. I know a great many people who are extensively engaged in fruit-growing, yet with that knowledge were I to undertake to get down and telegraph the exact condition of the prune or raisin market here, the chances are sixteen to one that I would not get it right. No one can get down to the business of the thing without knowledge. Those minute details you can not get out of any consular service. But those items which appear in the current literature of the country to which he is assigned he can get, and this information is the greatest possible information to the fruit-growers. But the details you can not get outside of those actually engaged in the business.

It demanded a great deal of work when we went into that correspondence. We had the labor, in the first place, of inducing the State Department to take hold of the matter. Congress would make no appropriation without the recommendation of the Secretary of State. We entered upon a correspondence which lasted about five or six weeks. The difficulty was to make them know what was wanted. When that was accomplished Secretary Hay thought he would be able to do what we wanted without an appropriation, and I want to see that done. Before this Convention adjourns I want the most emphatic resolutions made in appreciation of what these representatives have done. The people in Washington and the consuls don't understand just what we want in the way of information, and those matters will have to be explained to them more in detail. In their inexperience, however, they desired to do the very best they could do, and most of them sent us long reports containing the information that was sought, but it was mixed up with a great deal of other matter. That stuff comes in here by telegraph or mail, and is turned in in the evening to the editor of a daily paper. There may be a great deal of this matter, and he has got to cut the copy down. Now the young men who do the editing are not expert fruit men, and can not pick out the most salient points. If the matter could be edited by the Associated Press and sent out to the country papers it would be of more benefit. We have not only got to get this information, but to get it where every fruit-grower can get the advantage of it. You have got to get the country papers to demand the Associated Press to send it. This will cost money, and they are disposed, all of them, to cut down their telegraphic messages. If those papers who receive those telegraphic messages know their constituents demand it they will get it for them. This needs the work of a committee to see to the editing of the stuff here before it is distributed, and the members of the Convention don't understand that this stuff costs money. Until it reaches San Francisco it is paid for by the Government; they will not pay for any further distribution of the news. The best plan would be to have the stuff come to us in San Francisco and let us distribute it from here. What we should do to-day is to thank the State Department and the consuls interested for their great service to the fruit industry of this Coast, and next to constitute a committee who has got the time to give a little supervision to the matter and see to it that this news is distributed after it gets here, and that it is cut down and put in a shape so that the people can get hold of that information. And that committee will follow the service up and enlarge upon it wherever it is shown desirable, and from year to year it will increase until it becomes, in my judgment, of exceedingly great value. I think it would be a proper thing to do for the State Board of Horticulture to make a slight appropriation for this purpose, and I believe that the best thing to do would be to turn the thing over to the State Board of Horticulture, which is engaged in some degree with the Department, and whatever expense there is connected with it they are in a position to pay. It will only be a trifle, but it is something to pay for. I hope the matter will be discussed a little bit.

MR. BERWICK. I would like to say this: that in the past the Commercial Museum has done this work for us and has charged us nothing, and they have done it regularly and effectually. It now seems to me hardly gracious to take it from their hands until they are ready to resign it.

At this time President COOPER introduced Mr. Eugene Goodwin, Secretary of the Pacific Coast Commercial Museum.

ADDRESS ON CONSULAR SERVICE.

BY EUGENE GOODWIN.

Your committee has requested me to tell you something about the State Department and its workings, and what it might do for the fruit-growers of California.

The State Department is the medium through which the United States has its relations with foreign governments, and of course contains many branches. The principal one in which you are concerned is the Bureau of Foreign Commerce, presided over by Mr. Frederick Emory, whose desires are to help in every possible manner every branch of industry in the United States—fruit-growers, manufacturers, jobbers, and others, and to assist them in obtaining knowledge in regard to foreign markets. This is done through the medium of the United States consuls and commercial agents who are stationed all over the world.

Within the last few years the consular service has been greatly improved, by taking from many of the places the appointment of these gentlemen by politicians. All the consuls and commercial agents have been placed under civil service rules, and they must pass examinations as to their fitness and so forth. In this way a great many politicians have been deprived of situations. I think it may be said without fear of contradiction that within the last five years, particularly, our consular service has very much improved. The gentlemen in Washington who have charge of these matters are very earnest in their desire to help every branch of manufacture or produce in the United States. When your committee came to us last spring with this plan of requesting Government aid in telling the fruit-growers and handlers of fruit in California something about the possibilities of foreign markets, we took up the matter and formulated a series of questions upon the most prominent articles that are produced in California, and forwarded them to the Secretary of State, with the request that certain reports be made upon them at three different times in the year. These were to be, in the main, first, reports as to the crop conditions and possibilities in the early summer and spring as compared with the previous years, and such general information in that direction as might easily be obtainable. Then, next, the size of the crop, etc., and any other changes that may have occurred in the meantime. Then when the first fruits—prunes, raisins, almonds, and walnuts—came into the market, cables were requested at many points in Southern Europe, especially Spain, Italy, France, and Bordeaux, and also at Hamburg, as to the opening prices of these articles. Then, following later, reports by mail as to the market conditions and concerning previous cables, etc.

Of course in starting a service like this the first attempts were somewhat crude, and neither the questions nor the answers just what they should have been; but most of the consuls seemed to enter into the spirit of the thing in a very commendable manner. The Commercial Museum is a new organization and is not yet in full running order. We are very glad to take up this matter and assist you in any way, because one of the purposes of the Museum is for the marketing of the products of California. These reports have now ended, and, as you know, were made up in as many ways as was possible with our limited resources.

This service has been entirely gratuitous so far as the Government was concerned. The only expense has been the cost of cables in getting these opening prices. Just what that is I don't know, because the bill has not been sent to us. A cable code was arranged, so that these reports were sent in a very few words. We are very willing to continue that sort of work for you, provided, of course, that you desire it. However, if the State Board of Horticulture wishes to take it up I have no doubt the State Department would render as efficient service as it does to the Museum. This work comes within the objects of our organization, and we are perfectly willing to continue it. I would suggest that while you are here assembled for the purpose of discussing your business and the enlargement of your markets, especially foreign markets, you should appoint some committee representing the different interests to consider this question very carefully, and to formulate a series of questions which will exactly fit each product, and place those in the hands of your State

Board of Horticulture or ourselves, just as you wish, and place them before the State Department, asking for an extension of the service. This would undoubtedly be given to you, and if the service that has already been rendered to you this summer has been of any material benefit I am sure the second year will be more so. There is an element of uncertainty which our consuls encounter in obtaining this information. In France the consuls had much trouble from the French handlers of fruit. They grew rather reluctant when they found that Americans wanted information about their fruits for the promotion of fruits from America.

I don't know that I can say anything more to you on the subject, except to make a suggestion, and that is that it would be very proper and effective for you and your interests that a suitable resolution should be passed here thanking the State Department for its work, for they are human, and they look for an appreciation of their efforts; and I think that if such a resolution was sent to them by you it would spur them on to do better work with much more spirit, although their spirit has been good as it has been. As you all know, you have many competitors, not only in this country, but also in foreign countries, and if you are going abroad with your products you must obtain the best information as to crop and market conditions. These conditions apply not only to fruit, but also to all articles of commerce which you have to sell abroad, and this information can not be had satisfactorily by correspondence, as some of our people are trying to get it now. If you are going to sell an article in any other State you send a good man to represent you, and abroad you have got to do the same thing. In our present consuls we have got good men. I believe the sale of California fruits will be greatly enhanced if these methods are adopted.

MR. RIGHTER. These cablegrams are free, and yet some one has to pay for them?

MR. EMERY. No, sir; the service of the State Department is free, except that portion of the information that comes by cable; that has to be paid for.

MR. RIGHTER. Who pays for it?

MR. EMERY. The Commercial Museum.

MR. ADAMS. I wish at this time to offer the following resolution:

Resolved, That the thanks of the fruit-growers of California, in annual convention assembled, are hereby extended to the Hon. John Hay, Secretary of State, for authorizing the employment of the consular service for systematically gathering information valuable to fruit-growers; to Mr. Frederic Emory, Chief of the Bureau of Foreign Commerce, who has supervised the work; and to the many consuls who have so cordially responded to our request. And we respectfully request that this service be extended and perfected as experience may indicate as desirable.

Resolved, That our hearty thanks be also extended to the Pacific Commercial Museum, and to Mr. Eugene Goodwin, its director, for its effective work in receiving, copying, and distributing this information, at the cost of the Museum. We desire that the

Museum continue this service for the fruit-growers on such terms as may be arranged between the Museum and the State Board of Horticulture.

Resolved, That this subject be now permanently referred to the State Board of Horticulture, with the request that it will assume a general oversight of these services in behalf of the fruit-growers, and that it make an appropriate contribution to the Commercial Museum toward the expense of the service.

The resolution was adopted by the Convention without reference to the Committee on Resolutions.

MR. NAFTZGER. I offer the following resolution on national quarantine law:

Feeling as deeply as ever the vital necessity for a national quarantine law for the protection of our fruit industry against the importation of fruit or trees, plants, shrubs, vines, buds, or cuttings, commonly called nursery stock, infested with any disease, scale, or insect pest, we, the fruit-growers of California, in convention assembled, hereby give our cordial approval to House Bill No. 96, introduced into the Fifty-sixth Congress by Mr. Wadsworth, and we do most earnestly request all members of Congress from California to use their best efforts to secure the enactment into law of the Wadsworth bill, or one embodying similar provisions establishing national quarantine regulations.

Resolved, That a copy of this resolution be sent to each member of Congress from California.

Resolution by Mr. Naftzger was referred to Committee on Resolutions.

WORK OF THE CALIFORNIA FRESH FRUIT EXCHANGE.

By A. R. SPRAGUE, of Los Angeles,
General Manager of California Fresh Fruit Exchange.

At almost every annual State Horticultural Convention for six years past, the necessity for some organization of the fresh-fruit growers has been most strongly urged. At the convention in Sacramento three years ago the matter passed to the appointment of a committee for preliminary organization, and this committee did considerable work endeavoring to secure a car line to be owned and controlled by the growers, but finally abandoned the attempt.

Again, a call was issued for a special convention of fresh-fruit growers to secure the organization of that interest last year. The meeting was large and enthusiastic, I am told, and appointed a committee to secure organization upon the basis of a contract like that of the Raisin-Growers' Association. This committee did some hard campaigning in the endeavor to so shape things as to do business in fresh-fruit shipping upon that basis. It was a plan, however, that did not very generally commend itself to experienced fruit men as practicable, and so upon the advice of Mr. Naftzger of the Southern California Fruit Exchange and at my strenuous urgency when called into council as one of the temporary directors, the old plan was abandoned and it was determined to take up the work upon the exchange basis, or selling delivered plan.

By this time the shipping season was just at hand, and but little time remained in which to organize the business to take care of the crop now almost ready for shipment; but it was vigorously undertaken by organizing the California Fresh Fruit Exchange and subordinate local associations at a few important places of shipment—among others Loomis, Penryn, and Newcastle, and later on at Rumsey and Placerville. Time did not permit organizations at other places, but carload shipments were also made from Sacramento. Owing to the general failure of early fruit at Rumsey and Placerville, because of the frost, but three cars were sent out from the former place and an equal number from Placerville, although fruit from both places was sent to other shipping points to make up cars. We contracted with the Southern California Fruit Exchange for the use of all of its agencies, so that for the fresh fruit business they were ours absolutely and exclusively, and they received instructions regarding our business solely from our office so as in no way to confuse or mix up the two lines of business. Many of them had had no previous experience in fresh fruit sales, but they had an extensive and favorable business acquaintance with the men in their part of the country who were buyers of fresh fruit, because they had for years been selling these same men citrus fruit, and they were quick-witted, clear-headed salesmen who very soon acquired such special knowledge of the new business as to enable them to hold their own with "the other fellows." Not one single car went forward which did not yield a profit beyond costs of freight and refrigeration, although owing to faulty refrigeration and freight delays the fruit broke down so badly in two cars as to leave little margin of profit.

The business of the California Fresh Fruit Exchange up to the first of November amounts to $208,000 gross, which was done at a total cost, including every expense, of $14,000 in round numbers, including funds now on hand. About 208 full cars were shipped East, and sales were made in thirty-eight different cities—the chief distributing centers of the United States and Canada.

We have refunded to one of our local associations $2,900, the proceeds of savings in purchase of supplies and of charges for car loading, and proportionate amounts also were refunded to the smaller associations.

We have not lost a dollar from bad debts. Our members who have shipped with us for the whole season quite unanimously agree that they have received a net amount for their fruit considerably greater than their neighbors who shipped through commission firms or who sold for cash in the best cash markets. It would be too much to assert that no shipper was disappointed at any time, but to those familiar with the business it will not seem strange that we can not say this. One association sent out only three cars, all in one week and all upon a poor market. One of these cars was met upon arrival by a vicious cut in prices on the part of the agent of an old commission firm. The car could not be diverted, as it was in a railroad pocket, and hence its net returns were not very satisfactory. Another of these cars was badly delayed in transit, and hence arrived in poor condition and sold only fairly well; while the third sold well upon a poor general market. The other shipments in small lots from this association were burdened by excessive local express charges. The same conditions existed with the other small association which was able to ship for but a small part of the season, so that at these points the demonstration has not been fully satisfactory; but at every point which was able to ship throughout the entire season, the unanimous feeling of the growers is that we have fully demonstrated the entire success of the exchange method of coöperation in handling fresh fruits, and so have cleared the way for placing the industry upon a firm, self-helpful basis. Some people may think lightly of this movement because we handled so small a portion of the total output this season. But this is by no means warranted. It would not have been wise to undertake a very much larger business with only a few days in which to prepare for it, on the part of ourselves and of our agents. But with the season's experience and with five months' time in which to get ready for next year's business, we should be able to do with greater economy and success several times the volume of business done this year, and a larger volume with a greater variety of fruit to ship would remove many difficulties experienced this year. The cost of doing the business decreases rapidly as the volume increases.

In this review of the season's work I have taken it for granted that our methods are understood by all, but perhaps a word of explanation may be desirable.

Wherever there is fruit sufficient to enable growers to load a car daily, or on every other day, they may form an association to take charge of assembling the fruit and loading cars. Three or four growers with large acreage may do this, but generally a larger number of smaller growers unite for this purpose, adopting articles of incorporation and by-laws to enable them to do business legally. This association is represented by one of their number upon the board of directors of the California Fresh Fruit Exchange. All supplies for all of the associations are purchased by the central exchange, and full records of every individual shipment are kept both by the local association and by the central office, thus being able to check each other and prevent mistakes. When the car is loaded two copies of its manifest are sent at once to the central office, one tacked up in the car, and one kept on file. The car is then in charge of the central office, which, together with the general Eastern agent, determines its destination and sale. Reports of sales are received daily by wire, and auction sheets are mailed from sales in auction markets. These are at once bulletined to the local associations, so that every grower may know how sales are going day by day. After each sale, the agents remit promptly to the central office, and this then sends to the manager of each local association the individual account sales, with checks for balances due; these, after checking up, he hands to the growers when they next come to deliver fruit. At the close of the season, from the refund paid to it from the central exchange, the local association distributes, in dividends to its members, the money in excess of the amount needed to pay their corporate expenses for the season—a grower's profit, resulting from the economies of coöperation, entirely outside of what they receive from the sale of fruits.

Every possible effort is made to assist growers who may need temporary aid, when this can be extended without risk to the organization. We do not speculate, but undertake to sell the products for the grower with the utmost possible economy and efficiency.

At present, although we have had a most successful season, we feel that we were able to accomplish but a small part of the good which we hope to see secured by this organization; for so long as thirty or forty different shippers are juggling with five thousand cars of perishable products in a hundred various markets, thousands of miles away, each in utter ignorance of the other's destinations and diversions, there are bound to be most serious market interferences, resulting in some places in gluts with ruinously low prices, and in others in famines which most seriously check consumption, so that the business of growing fruit for Eastern shipment, which should be safely profitable year by year, is now but a gamble.

By this chaotic way of marketing, at a conservative estimate we come short, at least 20 cents per box, of the average prices which might be obtained were the fruit to be intelligently distributed by a single agency, careful to see that each market is kept supplied up to but not exceeding its capacity for consumption. This would save to the fresh-fruit growers of California a million dollars per year—a comfortable sum this would be for growers to divide, even in this prosperous season. Such a result will easily double the value of every fresh-fruit shipping ranch, and its prosperous tide would be felt in every channel of trade on the Coast. Now, fellow fruit-growers, why not proceed to accomplish this? The coöperative path lies plainly before us. We need but to go forward in it to reach freedom and safety. For years the fresh-fruit growers have been told that the exchange methods which were conceded to be successful in marketing citrus fruit could not be used with fresh fruit. The Fresh Fruit Exchange has this year shown beyond question, in times of good markets and of poor markets—for we had such in the Salway season—that this plan is admirably adapted to fresh-fruit marketing.

It is true that the friendly business relations existing between many growers and the commission firms that have loaned them money and shipped their fruits make many men hesitate to break away from such firms; we must respect such feelings, but question their judgment. However, rather than that the fresh-fruit interest be barred from such great success by friendly considerations for these great shipping firms, it would be better to pension them off with a few hundred thousand dollars per year, simply to keep out of the way, for even then the savings would be so enormous that such payment would hardly be felt. But of course they would not take such an attitude as that, for they are managed by able business men, who would easily find another field of action.

Again, many growers whose hearts are with this movement are so tied up by small loans, all too easily obtained from commission firms, that they can not ally themselves with the movement. This is a most serious condition—one of practical peonage in many cases—and it must receive the most careful consideration of all who are interested in the future of the fresh-fruit industry.

Some means must be devised by which such men may be helped to free themselves. And some way will be found to do it; but for the present we must rely mainly upon those growers who are now free to follow their own clear judgment as to methods of marketing fruit.

In each community that ships fruit, some man there should be clear-visioned enough to see the advantages of such coöperation, and unselfish enough to be willing to start the movement in his own neighborhood. Every such one will receive prompt assistance from the Fresh Fruit Exchange, but without such local initiative we shall be able to extend these organizations but slowly.

Coöperation is the one thing needful; the one condition absolutely essential to the development of the fruit areas of the State, for in no other way can we survive the competition in Eastern markets threatened by the immense areas now being planted in favorable sections of the East; and it is also the only way in which we can secure from the giant corporations, which nominally serve us but actually dominate us, concessions such that, year after year, we may have some fair share of the products of our labor.

At this time Mr. Alex. McAdie appeared before the Convention and extended a general invitation to the members of the Convention to visit his offices in the Mills Building, San Francisco, and that he would there discuss with them the frost problem.

MR. BERWICK. Mayor Phelan was here yesterday, and he stated to us that they were killing "Jack Frost" in France by firing cannon at him. I would like to have your opinion on that, sir.

MR. McADIE. That is an expert question, and it will take a long time to answer it. I will say, however, that we place very little reliance on the cannon-shooting question.

Upon motion of Mr. WILLIAM JOHNSTON, the thanks of the Convention were extended to Mr. McAdie for his appearance before them, and for the kind invitation to visit his department and offer enlightenment on the frost question.

Upon motion of Mr. JOE WALDROP, an invitation was extended to Mr. McAdie to speak to the Convention for one hour upon the question of frost, which invitation he accepted.

THE RAISIN INDUSTRY.

BY M. THEODORE KEARNEY, OF FRESNO.

The truth is, that when a request was made of me for a paper on the raisin industry before this Convention, I was engaged in the occupation of selling raisins at a very serious loss, and I feared to express my feelings at that time lest I might say something I wished I had not said, and therefore I replied that I could not see my way clear to prepare a paper for the Convention.

I realize the necessity that we are under to obtain facts and the experiences of all in dealing with this subject of coöperation and the marketing of our fruits, and perhaps I might state one or two experiences, if you have time, on that point.

There are two classes of fruit that we have to deal with, and I think they need to be dealt with in an entirely different manner. One is fresh fruit, or the perishable article; the other is the dried product, which might also include such products as olives and olive oil, and of course all the dried products such as apricots, plums, peaches, and raisins, and such things as can be carried over and need not be forced upon the market. I was very much interested in listening to Mr. Sprague's report on the operations of the Fresh Fruit Association this year, and of course we know of the successes of Mr. Naftzger and his association in the marketing of citrus fruits. It appears to me that both are on the right road in the handling of those products. The necessity there is to find an immediate market, or else we might have on our hands fruit that would spoil. But in the handling of prunes and raisins and other dried fruits we are not obliged to sell at once. And I have from the first been firmly convinced that if we could go into the markets and say to the dealers, "Here is a product that you need, one that will be wanted all the year round, one that we can carry if necessary and supply to you as you need it, and that we will hold the price of it and sustain the market for it, not at excessive rates nor yet at a price that will give us no profit," we could greatly increase the sale of our product and get a satisfactory price for it. To be entirely successful looks to the fixing of a price and the maintaining of that price in its distribution. Now, in order to do that we must have organization among the growers; in fact, organization is required for all our purposes, whether in dried or fresh fruits. We must have strong organization, and a foundation for that organization that will have strength.

I have been here in San Francisco working on this matter for the last few days, that is, to know in what manner we can draw and secure a contract which will bind the grower to deliver his fruit as he promises, and will yet be free from objections in the nature of trusts. There are laws on our statute books which say, "You shall not form a trust which will interfere with the free marketing of products." An individual may do that if he owns all the property that produces the article which he has to sell. The Standard Oil Company may buy up all the wells in the country and all its distributing agencies and can say, as it is an individual, the price shall be thus and so, and they succeed. But the law contains a number of forms whereby individuals can not come together and do that same thing. We unfortunately are a multitude, and have to deal with the property of the different owners—a great many items of property. A few—twenty or thirty or fifty or one hundred—manufacturers can get together and fix their shares and sell whatever they have to sell at whatever prices they desire, but it is different with us in putting our farms into one company, and for that reason we can not fix a price. The law says, "You shall not, as individuals, form a corporation" and do what the Standard Oil Company is allowed to do. That is where our trouble begins. We must have organization, and we can not depend entirely in that organization upon the bond of honor. In our discussions in San Francisco we have heard a great deal about the bond of honor. I can say for our Fresno growers that a great many lived up to their contracts. Seventy-five per cent put their crops in the association this year when they were tempted by higher offers to sell on the outside. There is a minority, however, and it takes but a small minority to demoralize the market when you say the price shall be so and so and the article shall not be sold for less. As an illustration, you take the raisin-growers' crops. We have three or four thousand carloads of raisins to sell; the association may have thirty-five hundred carloads under its control. The other five hundred cars may be on the outside offered for sale by the commission man or packer or by the growers themselves. There may be a dozen of them to handle that five hundred carloads. On general principles, the Eastern man doesn't believe that the growers can get together and stay together, and then he is offered a portion of those five hundred carloads, and he is offered them by a hundred different men, and his suspicion is confirmed that instead of our having seventy-five or eighty per cent of the growers, we have not got fifty per cent, and that it is therefore not safe to buy from us. There is where the mischief of the minority comes in. Some of the growers at the last annual meeting, in fact the whole of them, instructed their directors to handle this season's crop in this way. If the growers on the outside insist on staying out the association directors shall cut the prices and meet every cut that is made by the outsider. We have an expression that "the association has held the umbrella for the outsider." This cut was the instructions to the directors. Well, in addition to that difficulty, we had to deal with the decisions in the prune cases. As you all know, the Prune Association adopted the Fresno Raisin-Growers' form of contract, and in the litigation the courts declared that the grower was not bound by the contract to deliver more than two per cent. I believe the Prune Association declared that the association should have two per cent for handling the fruit, and if the grower saw fit to deliver two per cent he could deal with the ninety-eight per cent as he pleased. That left the weak-kneed grower who joined the association practically free to sell his crop outside if he wished to. I saw the danger in that condition, and I brought the matter up before our directors and growers, and I asked them to abandon that contract, and to have a new contract signed, and the form of this later contract would be the leasing of the vineyards to the association. The most absolute combination is the Standard Oil combination or the Steel Trust. It consists of the purchase, absolutely, of the properties; but that is not feasible with us. The next step is a lease; we thought that if we got a lease and allowed the grower to work his place under contract with the association we would have control of the crop. The title to the crop was what we wanted. That was a radical step, and it frightened some of the growers, but there was no cause for their being frightened; there was no injury to their title to the property, for the property would sell twice as readily and for twice as much as without it. They hesitated. Then again, some of them said, "My neighbor on the outside got more out of his crop last year than I got, and I am going to stay on the outside too."

The result of it was that on my return from Europe, where I went for the summer, I found that there was only twenty per cent of those signed after three months' work. We undertook an active canvass and worked the number up to sixty per cent, and the other forty per cent remained on the outside. There were seventeen concerns on the outside seeking to make contracts with the growers and buy the raisins from the growers. There was but one step to take that I could see if we were to save any semblance of an association, and that was to smash the market of the outsider right then and there, and prevent him from selling his product at any price until we made an effort to draw those growers together. I announced to the trade in the East that the growers had authorized the directors to cut the price to 2 cents per pound in the sweat-box if necessary, in order to meet competition on the outside, and of course the trade at once withdrew from the market, and the sale of raisins was absolutely checked. We then started in to see if we could get those contracts signed; but the effort failed and we got only sixty per cent, and we marketed our crop at a reduced price. We should have got at least for this year's crop 4½ cents a pound; the growers will get about 2¾ cents; that is the result of their failure to come together.

Now, after that experience I suggested that those who were willing to sign a lease could do so and form an organization—put their crops under the control of the association in the form of a lease; and those who will not do so, that they be invited to sign a contract for three years, agreeing to sell their crops to the association at a fixed price. It has been suggested to them that the association could pay them 4 cents a pound in the sweat-box for their raisins if all will sign. Of course, it is impossible to expect all to sign. Then I proposed to suggest to them that if 95 per cent will sign we will pay 4 cents. This is the latest suggestion we have to make in dealing with the marketing of our crops: If we secure control of 75 per cent we will agree to pay cash on delivery at the rate of 3 cents per pound for the raisins; for 80 per cent we will pay 3¼; for 85 per cent we will pay 3½; for 90 per cent we will pay 3¾, and for 95 per cent we will pay 4 cents. The object of that scheme is to make it to the interest of every man to pool his crop, whether he likes the association or not. I have little hope of securing a contract, under the present condition of things, which will hold the growers whenever they desire to stay out. We run up against the trust idea every time, and it seems to be an impossibility, under the present law, to devise a contract which will absolutely hold the growers if they don't care to be held. Now this sliding scale is introduced to make it to their interest to put their crops in absolutely, and we hope in that way to bring about results.

What I wish to call to the attention of this Convention is this point, and I think the Convention should take some action in the matter later on: As I have suggested, the Standard Oil Trust, the Steel Trust, and many other corporations merge their property into a single individual and thereby take charge of their products, and by which they are enabled to fix such a price as is satisfactory to them, and we, the consumers, are obliged to pay those prices without this protection. Now, in what way can we get even? You can not compel them to reduce their price. We must have their products, and I see no other way for we who are producers than to put our product upon an equality with theirs, and then we will have an even chance. I see no other way than to raise the price of our product upon an equal basis with theirs. To do that, you should have a law that will bind and hold the growers together, whether they like it or not, after they once sign. It does seem to me that it is necessary to go to the Legislature and ask that a statute be drafted giving producers power to form such organizations, and in such a manner that the courts will not declare them in opposition to public policy. That is one of the most important matters, I think, we have to deal with, as fruit-growers in California. It applies, as I have said, to all such products as should be handled by fixing the price and maintaining a market. It does not necessarily apply to the producers of deciduous or fresh fruits or perishable articles, but it does apply, and is necessary, where you seek to fix a price and maintain it, and a very large part of our productions is of that character. This would not only apply to fruit products, but it would apply to every other product that California is capable of yielding to this country. Our wheat-growers are endeavoring in some way to put their business on a paying basis, and such a law as this would also be the means of helping them out.

I would suggest that this Convention recommend to the next Legislature that it pass a law which will enable the fruit-growers to form an organization which will not be in opposition to the law of the land, and which will enable them to stay together.

MR. RIGHTER. I would like to know if the reason these people won't come in is because they have not got the money, and they don't see any means of coming into the association?

MR. KEARNEY. In answer I will say that we have established a system in handling our products by which the grower makes a draft upon the association, payable out of whatever funds are received by us from the sale of his crop. That draft he can cash at any bank or he can get it cashed by his bankers who are handling his property, and, therefore, there is never any trouble about his getting, say fifty per cent of the value of his crop advanced, and very often seventy-five per cent of the value of his crop is paid to him in advance of its being sold.

DR. SHERMAN. I want to correct a few impressions that you might get from the talk by Mr. Kearney, and I speak from the standpoint of the grower. We believe that this organization can be kept intact if the right policy is pursued, and it is simply, in my judgment, and in the judgment of the growers with whom I have conversed, a matter of difference in regard to the policy of the association. And to demonstrate to you the loyalty of the growers and their desire to stand by the association and to preserve its integrity and its organization, I will say to you that they unanimously this year were of one opinion and of one desire to maintain the integrity of the organization; and as a demonstration of their loyalty, they delivered their raisins to the association this year when they could have had a higher price on the outside. I was offered 4 cents for my raisins on the outside for the whole crop in the sweat-box, and I delivered them for less than 3 cents to the association; and at the same time there was no temptation for me to sell them on the outside, for there was a moral obligation to sell them to the association. I believe that was the sentiment with all the growers in the association. The differences have been with the methods that have been pursued by the organization in the matter of changing the original contract to the New Jersey contract. I know, by speaking to the growers and by being a grower myself, that they are unanimously of the same opinion in their desire to hold together this organization. Mr. Griffiths, one of the largest growers in Fresno, said he didn't believe there was 1½ per cent of the raisins outside of the association this year. This year the conditions were good for obtaining a high price—a good price—for raisins, and in order to force the growers to sign this New Jersey contract which was objectionable in many respects, and in order to punish the outside packer and in order not to hold the umbrella over him, the raisins were put down to a lower figure. After Mr. Kearney came from New York he said he proposed to break the market and put the price down to 2 cents, and the market was broken. It was generally supposed that if this course had not been pursued the trade would have taken all the raisins and taken them at a good price.

MR. DORE. Now, in reference to this memorial to the Legislature. I am heartily in favor of it if it applies to coöperative organization. The California Raisin-Growers' Association was a coöperation for the growers. If the contract can not be made strong enough for that organization to hold the crop, I am in favor of having a law that is strong enough to hold the organization, so that we won't have to go to New Jersey for a contract to hold the producers of California.

The Convention then adjourned until 1:30 o'clock P. M.

AFTERNOON SESSION—SECOND DAY.

WEDNESDAY, December 4, 1901.

PRESIDENT COOPER. I will announce the following committee to prepare a resolution to President Roosevelt indorsing his message so far as it concerns the fruit interests of California:

First, the favorable attitude regarding the interoceanic canal;

Second, the great interest manifested in the irrigation problem of the great West, with forest preservation;

Third, the consular service in the interest of the producers;

Fourth, the Pacific cable.

On that committee I will appoint F. M. Righter, Hon. William Johnston, and N. W. Motheral.

THE CALIFORNIA WINE INDUSTRY, ITS FUTURE, ETC.

BY W. J. HOTCHKISS, OF HEALDSBURG.

It is not my purpose in this article upon the future of the wine industry of the State to go back and give a history of the rise of the viticultural industry. What I desire to draw attention to is the line along which I believe the cultivation of the vine and the production of wine can be carried out for the best interests of the State.

An industry is of profit to the State to the extent to which it gives remunerative employment to the people and profitable returns for the capital invested. I believe that the wine industry of California should be directed to the extent of large productions and larger distribution rather than to the production of small gallonage of fine wines at prices which would forbid their use except among people of independent means.

As fine and as good wines can be and are produced in California as anywhere in the world, whenever we take the time and expense to do it, and it is as well that a certain number, or a small percentage, of the wine-makers forward their efforts in this direction. But these fine and high-priced wines only represent a small percentage of consumption—we would say, in a rough way, five to ten per cent; therefore, the efforts in the production of wine should be directed along the line of the production of the ninety to ninety-five per cent which goes to make up the bulk of the wine produced.

It would seem a pity to divest the wine and the vine of the romantic and poetic ideas which have from time immemorial been associated with the cultivation and production of vineyards and wine; but the lines along which I think the production of wine should be followed in California should be entirely free and devoid of sentiment and the policy be dictated entirely by the grosser purposes of commercialism. California, in my opinion, already produces the best wine in the world. As a people we have not that patience which would induce us to build expensive cellars and to there store and age the wines for a long period of years, to be afterwards brought out and sold by our children, or perhaps our grandchildren, for their profit. What we want to produce is a wine that is cheap enough and good enough, so that the humblest laborer can have it on his table in competition with beer, coffee, and milk.

WINE-MAKING.—The wine of California is the best wine in the world for the same reason that we produce better results in all other lines of manufacture. We have a climate and soil equal to any for the production of good grapes. The manufacture of wine is a question of intelligence and mechanical handling. The old idea that around the making of wine there was some mysterious juggling not to be understood excepting through ages of hereditary knowledge is false. Fermentation is a matter of chemical study. The care and preservation of wines are also matters of intelligent understanding and germ annihilation.

Our wine is as far superior to the wine made by the old and antiquated methods of foreign countries as our other products are superior, on account of the better machinery and better facilities which we have. It is only necessary for an observer to go into one of the well-ordered wineries of California with its modern machinery, where nothing scarcely is seen of the grape from the time it enters the crusher until the pomace is carted away, and then to have him go into some winery of Europe, where wine is yet being tramped by the feet from the grape, where the pomace is handled in tubs, and where the general smell of acetic acid and decaying grape stems permeates the whole place, to understand why this is so.

RESISTANT VINES.—The wine-makers of the State, in order to keep up their production, are now planting resistant vines in large acreages. The three principal localities where wine has been produced in California are Sonoma, Napa, and Santa Clara counties. In each of these three counties the phylloxera has made such inroads that it has in many instances destroyed the principal vineyards, and it is only a question of time, and a short time, when the present vineyards will all have been a thing of the past. In Napa County, where the phylloxera first appeared a number of years ago, the planting of resistant stock has been going on for a number of years, but not attended with very satisfactory results. In many cases where the right kind of resistant stock was procured, it was not planted upon a soil adapted to that stock or the right scion was not grafted upon the resistant stock. The adaptability of stocks to soils and scions to stocks had heretofore been something the vineyardists had known but little about. The last few years, profiting by the experience of the older sections where the phylloxera first appeared, a careful study has been made of the resistant stocks, with the result that now an intelligent knowledge has been obtained by the vineyardists in the different sections, of the resistant stocks best adapted to the locality, and with this knowledge in hand it is reasonable to suppose that in a few years, even in the phylloxera-devasted districts, the planting of vineyards on resistant stocks will have brought the acreage back to that of former years. Added to this are the large plantings in the interior country, principally in the San Joaquin Valley, where the phylloxera has not yet made its appearance to any considerable extent. The area of the San Joaquin Valley is so great that vineyards can be planted at distances so extreme from each other that it would be a good many years before the phylloxera will communicate from one to another, and it is to this section that we now look in the next few years as the source from which the quantity of wine necessary to supply consumption is to be obtained.

The climatic conditions of the interior valleys are such that the very highest grade of dry wines can not be produced, but with modern systems of refrigeration and properly constructed buildings, wine which will be good enough to commend itself to the body of the people as a substitute for beer can be produced at a much less cost than in any other section of the State.

It is the opinion of the writer that the production of both dry and sweet wines in the San Joaquin Valley in the next five years will be such in quantity as to astonish those who have not made a study of the conditions there, and who have supposed that the phylloxera was on the point of destroying the wine industry of California, and thereby raising the price of wine to such a prohibitive figure that the masses could not drink it.

THE OUTLOOK.—To those who at this time plant vineyards, whether upon resistant or common vinifera stock, there is a promise of very large returns of profit, and it is reasonable to suppose that it will take at least five years to reinstate the vineyards to their former productive power, during which period the prices of grapes and wine are likely to remain, if not at their present very high value, at a good figure.

PROF. HILGARD. Mr. Hotchkiss has not told us whether he thinks it advisable to plant non-resistant stock or resistant stock in the first place. I wish to warn those who are going to plant that it is not the insect itself that carries itself by its wings, but it is a connection between them. It is not safe to plant non-resistant stocks to-day. I believe that north of the Tehachapi it is hardly advisable to plant a non-resistant vineyard anywhere. For my part I certainly should not advise any one in the San Joaquin Valley, or anywhere else, to plant non-resistant stocks at this time. I would emphatically warn all growers not to rely on any stock that comes from uncertain sources. There are a few places in this State where you can get the best resistant vines, and I emphatically warn the growers not to incur the uncertainties that have befallen them before. The uncertainty as to the exact stocks to be planted is very great, and then the soil differs greatly. As to the adaptation of the different soils, it is a matter that is yet uncertain. I should long ago have planted an experimental place to determine this. I don't think any one in the region of the San Joaquin can afford to plant anything but resistant vines. There is no reason why we should experiment, except with reference to the soils. We can take the experience of the vineyardists of France with their vines. I grafted, on account of the difference of soils in our vineyards in San José, part of the vineyard in Riparia and part in Rupestris. Those that I grafted upon the Riparia gave a good crop. The Rupestris is one of the small growers, and the Riparia one of the larger ones. Don't plant miscellaneous stuff, the adaptation of which no one knows, or you will suffer the loss that they suffered in early times. I know a great many think that everything has to be done over again in California, but so far as this point is concerned, Southern France has given us what an experience of thirty years has added, and I think we ought to avail ourselves of it.

MR. HOTCHKISS. I believe the only way we can keep up the present production is by the planting of the Vinifera stock on rich land. Find a good piece of land that will produce four or five tons of grapes to the acre, not right up against the phylloxera vineyards, but the State of California is so big that you can get twenty-five or thirty miles away from the phylloxera—out of the winds of it.

PROF. HILGARD. In order to keep up the production I think we can safely rely upon a few of the standard varieties of resistants—the Rupestris St. George and the Riparia.

MR. HOTCHKISS. There are not enough of those to go around, though, and it will be years before we can get enough of them.

PROF. HILGARD. If you graft those resistants on good vines you will soon get cuttings enough.

MR. MOTHERAL. We have an irrigated country, and the water all over it is from four to six feet, and we have a soil that we have dug artesian wells all over it and have never gone through it. Now what would you plant there—Rupestris or Riparia?

PROF. HILGARD. Riparia.

MR. MOTHERAL. If we don't get the wind from the phylloxera, do you think we will be affected with the phylloxera under those conditions?

PROF. HILGARD. In Fresno, last year, we tried to capture the phylloxera, but we could not find it. It is possibly scarce there. In the ground where sub-irrigation is carried on I think we will find it. The surface roots are apt to bring it about. The wings form more readily there.

MR. MOTHERAL. Are there some parts of France where you find our phylloxera?

PROF. HILGARD. Not in France, but probably so in Germany.

MR. MOTHERAL. Is it the condition of the soil?

PROF. HILGARD. No, not exactly. It is mainly a fact that the insects can not migrate in sandy soil; the sandy loam can not be relied upon. In Germany it is quarantined.

MR. MOTHERAL. We have just such a quarantine in our county. We don't allow rooted vine cuttings or anything of that kind to come in. Will such a policy as that protect us any length of time from the winged family?

MR. HOTCHKISS. If a wagon comes from Fresno and brings you a load of raisins and passes through a vineyard and takes up the surface soil it is apt to bring phylloxera.

MR. MOTHERAL. We are of the opinion that there is none of the winged form in Fresno. We can not find any indication of it, or of the gall form either. If we don't get the winged form we hope to escape.

MR. HOTCHKISS. Regarding the quarantine: I am often asked the question as to how the resistant cuttings are disinfected. Now, there is no difficulty about that at all. If you place the cuttings in a vessel that is air-tight, and fill the vessel with the fumes of bisulphide of carbon, and let the cuttings remain there for twenty minutes, every phylloxera germ will be killed. Just pack your cuttings into a dry-goods box and set therein a saucerful of bisulphide of carbon, and let them remain there from six to twelve hours with the box closed.

PROF. HUSSMANN. Mr. Hotchkiss says there is no trouble with Vitis vinifera vines, and that if you put them on rich soil they will live for five or six years, and give abundant crops. I differ with him. I think that the phylloxera in an infested district would prevent them from bearing at all before they were exterminated by the insect. Another thing in which I differ with him is that he says five per cent of fine wines are enough for California, and that everybody should strive to make common wine. These cargo wines will never establish the reputation that California ought to have for fine wines. I think those wineries which make up small quantities, not to exceed fifty thousand gallons, and make it under the personal supervision of good wine men, will always have to be relied upon for making the reputation of California for good wines, while the cargo wines, as they are commonly called, will never make any reputation. They may be a good drink for common people, and may sell at low prices, and large quantities may be sold, but they will never establish such a reputation for California as it ought to have. I can not see why those men of small wineries are not greater benefactors to California than those who make three hundred thousand or five hundred thousand, or even a million gallons, because they will have to bring the approbation of the wine-consuming public, and not of those immense establishments.

I will tell you another thing: The wages paid to scientific men who are able to take care of a winery of fifty thousand or one hundred thousand gallons are altogether inadequate. I knew of one instance, several years ago, where a foreman of a ranch in Napa County received $35 a month salary, and his board and, of course, quarters. They had a fine cellar built there, and three hundred and fifty thousand gallons of wine were made that season. The wine was made sour from one end to the other, and had to be distilled. Wouldn't that vineyardist have been wiser if he had paid a wine-maker $100 a month and turned out fine wines? What can you expect from a man that gets $35 a month?

I differ with Professor Hilgard in certain respects, too. I don't think we can depend altogether on French methods here, for the simple reason that our climatic conditions are entirely different, and our soils are not always up to the French standard. And therefore we must experiment for ourselves and find out what is adapted to our soils. I notice that phylloxera spreads much more slowly here than in France. Whether that is owing to the absence of the winged form or some other form, I don't know. In France they class the Lenoir as one-twelfth resistant, and the Scuppernong as one-twentieth. We will note that the latter is of no value here. First, it will not grow from cuttings; second, it will not take the graft; and third, it will not bear in this State. What is the use of mentioning such a vine at all? We can not do anything with it. Yet, what I think makes the difference between here and France is the difference of climatic conditions, and perhaps our vines do not suffer so much from the attacks of phylloxera—at least some varieties do not. Wherever I saw young vineyards established on young Lenoir roots in Napa Valley I found that the vines flourished in the highest degree and were making splendid growth, and I could see no material difference between the different varieties. They showed the difference in the foliage so I could tell them apart easily, but they all seemed to flourish well. I don't think it will be well to depend altogether on French authorities. We have our own row to hoe, and the sooner we do it the better. The resistant vine is the only true remedy against phylloxera.

MR. AIKEN. Mr. Chairman, I am like Professor Hussmann, who disagrees somewhat. I especially agree with the paper just read by Mr. Hotchkiss. I have had some experience in vineyarding, where I am raising a table grape worth $100 a ton and am growing it on its own roots. In one vineyard two years ago this last spring it bore enough to pay for its culture. It was the Tokay. With my rich soil I can defy phylloxera, at least for thirty or forty years, and I don't care what happens after that. Let us go on and raise vineyards that will bear large crops, and let us realize money from them. A neighbor of mine has been growing Riparias for years past, and I can grow more grapes on my two-year-old stocks than he can grow on his vines ten years old.

PROF. HILGARD. The Riparias of ten years ago did not bear, but the Riparias of to-day do bear.

MR. STEPHENS. Mr. Chairman, with your permission I will make a statement. I am obliged to beg leave of you to grant your Committee on Transportation further time.

Upon motion of WILLIAM JOHNSTON, Thursday afternoon was fixed as the time for the committee to report.

PRESIDENT COOPER. We will now hear the memorial to the next Legislature, prepared by M. Theodore Kearney.

MR. KEARNEY. I believe it is generally understood, and the feeling is universal among producers, that coöperation is what is most needed in order to gain the utmost success, and for coöperation you must have a foundation. The foundation is in the law which enables you to form your association. That law must be of a character which will assist you in your work and not deter you in your operations. As I understand it, the grain-growers are seeking to form an association in order to market their product so that they will get something out of it. Now, to reach that it is necessary for them to make charters to get their wheat out of here. The men in San Francisco control the charters, and make you pay two prices for having your grain landed in foreign markets. You must have charters for your own vessels. In order to do that you must be sure that you have the control of the crop when it is produced. To control the crop you must have an organization and that organization must be legal, and its action must be legal and just, or the contracts will not be upheld by the courts. It is the same way with the prune-growers. The gentlemen who are managing the prune business are called on to make contracts for the delivery of those prunes by the growers. How can they make a contract for the delivery of those goods unless they know they control the crop? How can they know they control the crop if they make a contract that does not bind the grower in case he is tempted to pull away from the association and sell on the outside?

You see, therefore, it all comes back to your power to control your goods after an agreement is signed to deliver the crop to you. And it is upon these things that the people who manage your business base their action. The law, as it is at present, says this. The grower has signed a contract to deliver his crop; for some reason or other he refuses; you then want possession of that crop. It is not the profit you make in handling it, and it is not the damage you would sustain by not having possession of the crop, but it is to have entire control of the crop that you are after. The courts say to you that your remedy is in a suit for damages. And in the Pool case the association had control of two per cent only, and the court said that the association's damage in that case amounted to $14. What good would that do the directors in marketing that crop? You see you are powerless unless you have a contract on the part of the grower which absolutely controls the crop. We are now seeking in the Raisin-Growers' Association to control the title to the crop. We ask the grower to sign a lease to the association; we ask the grower to work his vineyard just as he did before, and we will give him for his services ninety-five per cent of what he receives for his crop. The point is this: that we want to be in possession, being the owner and controller of that crop and not only the five per cent which we propose to get. We were forced to go outside of this State to find articles of incorporation that would meet all the requirements of the growers.

I will now read this memorial, and I will suggest that a committee of seven be appointed, which will represent the various industries—the citrus-growers, the prune-growers, the almond-growers, the raisin-growers, the wheat men, and all others whose interests would be likely to be affected by this law, so that we will have a representative committee that can prepare a bill to be submitted to the Legislature for its consideration. I may say, in connection with this, that yesterday I was in consultation with three attorneys. Before leaving home I wrote to the Bank of California, the Nevada Bank, and the Anglo-Californian Bank, stating the necessity for a contract to bind the growers, and asked them if they would assist me through their legal advisers in preparing such a contract. I had a session with three of these attorneys during the whole of yesterday afternoon, and I may say that such information as we may get through that source would be very available to the committee, and may be of great help in preparing the bill that the growers need:

Resolved, That whereas our laws, as interpreted by the courts, enable manufacturers and others to form combinations and control prices through a sale of any number of properties to one concern, and that these laws practically forbid the formation of associations of producers for a similar purpose, because it is not possible to vest the title to innumerable farms in one company, and that this condition is a gross injustice to all our producers and constitutes one of the greatest obstacles to the general prosperity of the whole State, in that it compels them to pay combination prices for everything they buy, while preventing them from obtaining combination prices for what they have to sell; and

Resolved, That as it is absolutely essential to the success of our producers that they form associations among themselves for the proper grading and marketing of their products, the Legislature of this State is hereby respectfully petitioned to enact a law at its next session which will effectively and immediately place our producers on an equality before the law in this respect with any and all combinations.

MR. SPRAGUE. I move that the resolution be referred to a committee for consideration and presentation to this Convention when it assembles next year, and at that time let the committee bring in recommendations.

MR. NAFTZGER. I was about to make this motion, but now I will put it in the shape of an amendment to Mr. Sprague's motion; that is, that a committee of seven be appointed to which the memorial will be referred, and that the committee be instructed to report to the next annual Fruit-Growers' Convention such recommendations as they deem wise in the form of amendments to our coöperative law.

Amendment carried, and the resolution adopted.

RESOLUTION INDORSING HON. J. A. FILCHER.

The following resolution was offered by MR. NAFTZGER in regard to the appointment of Mr. J. A. Filcher as Chief of the Department of Horticulture at the St. Louis Exposition:

WHEREAS, The commissioners from fifteen States and nine foreign countries, represented at the Pan-American Exposition, recently held at Buffalo, in the State of New York, have united in recommending one of California's citizens, the Honorable J. A. Filcher, for Chief of the Department of Horticulture at the forthcoming Louisiana Purchase Exposition, to be held in the City of St. Louis, State of Missouri, in the year 1903; and,

WHEREAS, The recommendation has been indorsed by thirty-six out of thirty-eight exhibitors in the Department of Horticulture at the late Pan-American Exposition; therefore, be it

Resolved, That the fruit-growers of California, in State Convention assembled, recognize and appreciate the compliment to our State and one of its citizens, and most heartily unite in recommending Mr. Filcher for the important position named; believing that his identity with our interests, his long residence in California, and particularly his very extensive and successful experience in exposition work, both in this country and in Europe, coupled with his recognized energy and executive ability, mark him as the man in all the West, and, for aught we know, in the country at large, most eminently qualified for this distinguished and very important position. We believe that his appointment would not only be a guarantee of energetic and efficient work, but would carry with it the assurance that at St. Louis, for once in the history of expositions, the great and rapidly growing horticultural interests of the world would receive the recognition their importance demands.

Resolution adopted by a rising vote of the Convention.

MR. FILCHER. It has been my misfortune, or fortune as the case may be, to be absent from home a great deal; last year in Paris, and this year in Buffalo. If I was easily impressed, I might be on this occasion—being called on immediately after hearing read that resolution in my behalf in connection with a movement which was started without any effort on my part, among my fellow commissioners at Buffalo, in favor of my selection in St. Louis for the position of Chief of the Horticultural Department. I was given to understand in St. Louis last week that there is no reason why I shouldn't have that position if the people at home wanted me. They recognized California as the leading horticultural State, and that our horticulturists are advanced in their pursuit, and they believed that some advantage might accrue to their great enterprise by distributing their executive officers to the different parts of the country. I will say that they are planning to make the St. Louis Exposition one of the largest ever held in the world. To give you an idea, there was about $10,000,000 expended at the last exposition in Paris in construction, and nearly $9,000,000 for the same purpose at Buffalo, and at the Columbian Exposition in 1893 $18,000,000 was spent in construction, and St. Louis contemplates an expenditure of $30,000,000 in construction. The World's Fair at Chicago occupied between six and seven hundred acres, and St. Louis has set aside about twelve hundred acres. They believe confidently that California will be there in some shape, and they feel that we are awake to the fact that we are handicapped for the reason that our Legislature does not meet until the January before the opening of their exposition in April. They depend upon the ingenuity of the Californian to overcome this difficulty. You will be surprised when I tell you that our work at Buffalo was accomplished, good or bad, as you may judge it, for considerably less than $10,000. Missouri, with its exhibit right opposite us, and with $75,000 behind them, looked over at our show and said, "Well, you Californians always have lots of money." But we never told them how little we had. There were a great many things that worked to the deteriment of the Exposition at Buffalo; if I should undertake to give you even a synopsis of them it would be tedious. There was one instance of exceeding sadness: It was the assassination of our noble President at the hands of a cowardly villain. It did seem to some of us people on the ground that to some extent the Buffalo Exposition, in spite of all its grandeur and magnificence of structure, was for some reason hoodooed.

I was the first exhibitor to begin work in the Horticultural Building, and worked almost day and night in order to be ready to open on the 1st of May, and yet, on the 26th, 27th, and 28th of April it snowed continuously. Eighteen inches of snow lay on our roof, and when it began to thaw and slide off to the dome of our beautiful building it hit on the glass, and when I went out on Sunday morning, the day before we were to open, I found ice and fruit and glass and snow all tumbled into a pile twenty-five feet high. That was discouraging. But believing, as my father said, "we would never know the difference in a thousand years," we went to work chopping holes in the floor to let the water out, and getting our fruit out of the snow and rebuilding our stands. We were then as far toward being prepared for the opening as some of the exhibitors, and further along than some of them. On account of this excessively bad weather, others were injured as well as the Californians. You remember, perhaps, that it leaked out that the dedication would be postponed until the 21st of May; the inference went out that the exhibitors were not ready, which naturally deterred the people from coming. On the 22d of May the fair was opened, but the people thought there was plenty of time, and they didn't come in large numbers. When they began to come the weather began to get warm, and you know what a warm day in the East is. They say we have got hot weather in California, but when it is warm here it is not that smothery, moist heat which causes your clothes to stick to you like poor relations. That kind of heat we don't have in California; ours is a dry, healthy heat. I know all the kinds of weather they have in the Sacramento Valley, and have run a header in the Feather River country at the time they said it burned the handles out of the axes, and where it was 112° in the ice-house. I have seen all kinds of weather. The people at Buffalo thought we would remain until the hot weather was over. I predicted an average attendance of 100,000 a day, and I was gratified to notice the attendance swelling up with the approach of cold weather to from 75,000 to 90,000, and it looked as though my prediction was going to be realized to the fullest extent, when all at once the saddest occurrence that has taken place in the country for years came to pass in the assassination of President McKinley, and the attendance dropped from seventy-odd to thirty-odd thousand, and in spite of all advertisement and inducements to people to come, they would not come. The Exposition is short about $300,000.

I want to say to you people that from the California standpoint it was a howling success, or to put it more gently, it was a great success. Ours was a profitable exhibit. It provoked very favorable comment. It was talked about in the exhibits, and around the halls, and by the visitors as "something you must be sure to see." I remember one evening on the cars a gentleman said to me, "Do you know whether this car goes to the Tift House?" And I said, "Yes." He said, "They have got some fine exhibits out there." "Yes, very good," said I. He said, "California's is fine, isn't it?" "Yes; where is that?" said I, and he directed me to it, and I told him I would try and see it to-morrow. He said, "You must, or you will miss the finest thing in the whole show." I said, "Where are you from?" He said he was attending the Congress of Electricians. I then told him I was connected with the California exhibit, and that I was from California. That is an illustration of the interest generally manifested in the show California was able to make.

I was just footing up to-day the results of our awards, and while we do not think we got all we ought to have, California returns with fifty gold medals, sixty-eight silver medals, about the same number of bronze medals, and I forget how many honorable mentions. Altogether, two hundred and thirty-nine awards were made to the California exhibitors, and I think it is fair to say that it is twice as many as were given to any other State in the Union. The awards were made by juries composed of as good talent as could be found in the country, and were made without any possible interference on the part of the exhibitors from California. You hear a good deal about judges being influenced in making awards at the different expositions over the country, but in no exhibit with which I have ever been connected do I know of a case where a juror has been influenced or attempted to be influenced, and I think such an attempt would be injurious to an exhibitor. You show your exhibits, and they make their findings and you abide by them.

Incidentally, I will say that I think the Buffalo field for California is a good one; this is the first chance we have ever had of getting away back before the great masses of Eastern people. We have never been with an exhibit farther east than Chicago. We found that the great mass of the people have only an imperfect idea of the real characteristics of California; we found them susceptible and very eager to learn the facts and particulars. We found a demand for our literature that amounted almost to greed, and I adopted there a different method to any I ever adopted before in the distribution of it, by placing it out neatly along the counter, each pamphlet by itself, so that the inspector could see what we had, and allowed the visitors to take what they chose, instead of having some one in charge of it and asking the visitors if they wanted some of this literature. I found that where you allow them to take what they want and only what they want, they will put it away and take it home. To prove that this is the best plan in distributing literature, I will say that I never found a single scrap of our literature about the walks on the ground, while they were littered with advertising cards and scraps of paper from all over the grounds. Many times we looked to see if there was any of our literature scattered around in the scrap piles, and with the exception of some cook-books which were handed out to every one who sampled our fruit, we failed to find anything. The visitors would take those books because they had been asked to, and did not like to refuse our courtesy. I believe that if those books had been left to be taken by only those who wanted them, none of them would have been thrown away. We found that the demand for California literature increased. The problem that presents itself to us is how are you going to get your matter in the best hands and get it there without being wasted. The Buffalo Exposition was a rare opportunity; we put the matter in the best hands, and none of it was wasted. Last summer we distributed in pamphlets about two carloads of literature, and could have distributed four carloads if we had that much. When we add to that literature the coöperation of a fine exhibit, and the constant talking of those in attendance, and detailed explanations among the visitors of matters relating to this State, and the information given by word of mouth and the impression given by our exhibit, I believe that more results than we now anticipate will come to us.

By the support of the California Cured Fruit Association we kept up a prune-cooking booth, in which we demonstrated the cooking of the California prunes, and I was fortunate in getting a woman who could not only stew prunes to perfection, but who made a very tasty prune cake, so that the prunes would show artistically through the cake when it was cut. She made prune pie and prune marmalade, and cooked the fruit in many other ways. They were shown to the people around that stand and given away there. We distributed 2,500 different recipes for the cooking of our fruit. I requested one boy to stand there and ask the people who tasted our fruit where they were from, and in one day there were thirty-eight and the next day twenty-seven different States, and the next day twenty-three or more. The grocerymen were delighted with that prune exhibit, and stated that their sales of prunes increased daily while we were there. Their sales increased from 20 to 150 per cent in the fresh fruit season with our little demonstrating stand there at Buffalo, so you can imagine what could be done by a little systematic work of this kind throughout the country.

As a result of the Atlanta Exposition, a man there had a store and he got his wife to try and cook fruit after the fashion stated in one of our little books, and it was such a success that he is now buying California fruit by the carload. We had similar demonstrations in Germany and in Paris, but were handicapped there because that year Europe had one of the biggest crops of fruit ever known in its history. Everywhere we went there was report of the big fruit crop, and wine was so plentiful that they couldn't find cooperage for it.

You gentlemen meet here and discuss fruit-growing in its various phases, but I say with earnestness that one of the great works of your body is the work of pushing the demand for your product. Your fruits have passed the mark of being a luxury; dried fruits are now strictly commodities; when we were little boys they were luxuries. The successful producers of fruit in this country and many others are pushing their product to the people. Here is California with a fruit product that runs into many millions of dollars, and yet no concerted effort of any great importance is manifested for pushing it to the attention of the world; but you can turn around and see the private enterprise of a chocolate and cocoa firm putting up a building at Buffalo that will cost a million dollars, just for those two articles alone. Whenever the day comes that California exerts a systematic and organized effort, and has people with samples of prunes and apricots and peaches showing the fine qualities of those articles and many others that you cook without any sugar, much good will be done. I bought a little bottle of pickled ripe olives the other day in Ohio. I asked the man if he sold many of these, and he said, "No, not much." I bought some of them to show to the family with which I was stopping, and to teach them how to eat them. After that had been demonstrated to them, the woman said, "You have played the dickens now; we have got to buy olives, and they are a dear commodity." How in the world do you expect to sell your goods and have people come here and hunt you up to get them when there are thousands of people at the other end of the line raising the same things and swearing that they are as good as those raised in California? People have asked me if we raised apples in California. Another gentleman asked me if they were good. I listened to Professor Bailey deliver a very interesting discourse on California before the National Pomological Society, giving his observations regarding this State. He was very fair, and reminded the fruit-grower of the East that California fruit conditions were not so very much superior to theirs, but it was the California fruit-grower himself. He said the difference was not so much in the fruit and soil, but it was in the man, and he cautioned them to take on some of the California enterprise and method in the matter of cultivation and care and bug-fighting.

I heard Mr. Jacobs say yesterday that our canned peaches are not as good in some respects as they used to be. I have heard people throughout the country say that once they got very fine California peaches, but they don't get them now. I believe that some of the canners are getting careless in the selection of their fruits and syrups. You must be honest with the foreigners. Be honest, and present good fruit to the markets where you expect to sell. The same applies at home. You can not sell poor fruit for a good price, and you can not fool the average American customer more than two or three times. You must not claim superiority for that which is not superior.

I understand you have already passed a resolution favoring the action of the people in St. Louis. I think California ought to be there, and be there in good shape. It is going to be a fine exposition, and the world is going to congregate there; the attendance is going to be good. The fruit-growers and producers and consumers will be there from the great Middle States, and there are going to be New Englanders come in from the great places of the United States. If California was as enterprising as she ought to be she would have an exhibit at the great food show of Boston and at the one now going on in Ohio, and at all those places where foods can be brought out prominently. You have either got to send out your own agents, or the fellow that is pushing at the other end of the line will get away with you.

A MEMBER. I was at the Buffalo Exposition, and I indorse everything Mr. Filcher has said. I saw all those things, and I know a lot of good was done, and I believe from what I saw there that we ought to have an exhibit at St. Louis, and the work ought to be started right now.

A rising vote of thanks was tendered Mr. Filcher for his address.

REPORT OF THE COMMITTEE ON LABOR.

ISIDOR JACOBS, chairman of the Committee on Labor, submitted the following report:

The committee appointed at the last Convention to consider the subject of labor, reports as follows:

That it convened shortly after the adjournment of the Convention, and held a conference with the chief passenger agents of the Southern Pacific Company, who promised to put into effect a colony rate for home-seekers, and this rate was shortly afterward put into effect, resulting in bringing several thousand people to the State.

The committee also formed an organization, called the California Colony Association, which was pledged for a period of one year for the sum of over $600 per month, for the purpose of bringing bona fide colonists to locate in this State, which resulted in locating in different parts of California over eight hundred families. They have also been promised by the railroads a further inauguration of the colony rate, which will undoubtedly bring many more people here.

The work done by Mr. Filcher assisted the Colony Association in its efforts, and the committee of this Convention has ceased its labors—the work now being carried on by the California Colony Association.

Upon motion of MR. RIGHTER, a vote of thanks was extended to the committee appointed to consider the questions of labor.

The Convention then adjourned until Thursday, December 5, 1901, at 9:30 o'clock A. M.

PROCEEDINGS OF THIRD DAY.

THURSDAY, December 5, 1901.

The Convention was called to order as per adjournment. President COOPER in the chair.

PRESIDENT COOPER. This morning has been set aside for the ladies. They have changed the usual programme, and have arranged a programme for themselves.

The following was offered by F. M. Righter:

To his Excellency THEODORE ROOSEVELT, *President of the United States:*

We, the fruit-growers of California, in State Convention assembled, send greeting, and beg leave to express to you our unqualified appreciation of the interest your message to Congress shows that you feel in the welfare of the producers of this great country.

Your recommending to Congress the urgent need of the earliest possible construction of the interoceanic canal and the connection by cable of the United States with Hawaii, the Philippines, and points in Asia, also the aid of the Government in the preservation of our forests and the construction of reservoirs and irrigation canals to be employed in the reclamation of our unsettled arid public lands, meets our most hearty approval.

Hoping that the good things in prospect may soon be secured, we extend in aid of these great accomplishments our grateful helping hand.

F. M. RIGHTER,
WILLIAM JOHNSTON,
N. W. MOTHERAL,
Committee.

Adopted, and a copy ordered telegraphed to President Roosevelt.

Vice-President WICKSON took the chair.

W. H. AIKEN, chairman of the Committee on Resolutions, reported favorably on the adoption of the resolution calling for the passage of a national quarantine law; also, on the resolution recommending J. A. Filcher for Chief Horticultural Officer of the St. Louis World's Exposition.

The resolutions were adopted.

Upon motion of Rev. WALDROP, the latter resolution was adopted by a rising vote.

HEDGE ROW VINEYARD.

By MISS LUCY H. HATCH, of Fresno.

Hedge Row Vineyard, three miles south of Fresno, is notable from the fact that women owned and managed it from its inception. It was established by Miss M. F. Austin, whose energy and intelligence won it success and reputation. Four women—all teachers—formed the company, and upon the opening of Central Colony in 1876, purchases were made until one hundred acres were included. None knew what could be accomplished, as the resources of the valley were undeveloped, and at the beginning all was experimental. The story of obstacles overcome, of failures redeemed, of the care and money expended, would be too long for this occasion. Miss Austin believed that horticulture for women ought to become a business for them as well as for men, and with that idea came to Fresno in August, 1878. A part of the vineyard had been planted two years before, and that year the pack of raisins was thirty twenty-pound boxes; the next year, three hundred twenty-pound boxes. From that time she applied her energy and intelligence to the development and improvement of the place until a home, ornamental grounds, drier, packing-house, and ranch appurtenances were complete. Her death occurred in March, 1889. We labored together from January, 1879, until March, 1889, when the burden of care fell upon me, and further this deponent saith not.

WOMEN'S AGRICULTURAL AND HORTICULTURAL UNION OF CALIFORNIA.

By MRS. EMMA SHAFTER-HOWARD, of Oakland.

The reactionary movement against subjective education as judged by results shows itself in various ways; in none more plainly than in the return to nature and the study of those elemental facts and factors which underlie the art of life and living.

The advancement of women in agriculture, like other evolutionary movements which call for the application of scientific methods and inventions to economics, is in line with truths and realities which result from the nature and relation of things. In this objective movement is involved the expansion and extension of the home idea as a progressive institution, vital to human society in all the phases of its growth.

This advancement is hindered by the gulf which separates the interests of city and country, especially among women; in the isolation of the country home apart from the so-called advantages of the town; and in the greater isolation of the city home in its lack of intelligence and sympathetic relation to its basis of supplies—the country.

It is largely the opportunity of women to throw out lines of mutual recognition and helpfulness, and to stimulate the home up-building of this State. "As a people are helped in their hearts to be brave in the face of difficulties, so they prosper."

The registration of the names of women in California who have entered into horticultural and agricultural pursuits has begun. It is the first important and practical step to be taken. Women throughout the State have been asked to send their names and statements of their special work and methods to the corresponding secretary of the Women's Agricultural and Horticultural Union of California. As this call is answered, there will be an increasing registration, which will lead to a bureau of information and exchange; and to a social organization based upon the natural conditions of our soil and its increase. It will open up and publish to the world advantages and inducements to home-loving, home-making people to come to our State in increasing numbers for suburban life.

About one hundred statements have been gathered, and represent various interests carried on by women, singly or in family relations. The record is remarkable, but far from complete as a directory. It represents industrial effort in homestead extensions from one acre to one thousand acres, yielding support to many families, and better still, making of the family a community partnership. It also shows the tendency toward healthful growth in the diversions of home-making folk, in efforts to beautify and enrich barren surroundings on roadside and in garden.

Other countries are far in advance of us in opportunities for the training of young women as well as men upon these industrial lines—notably England and Denmark.

At the suggestion of the California delegate to the great International Convention of Women held in London, 1899, a Woman's International Agricultural and Horticultural Union was formed. Each of the ten countries represented pledged themselves to organization upon these lines and to report in turn to the International Union. English and Canadian women have organized. Belgium is about to do so—also Argentina.

At the Fruit-Growers' Convention held in San Francisco, in December last, a step was taken toward such organization in California. Its object as shown in the prospectus is: To circulate useful information, to compare methods of different districts and countries, and to encourage and stimulate (*a*) farming, dairying, stock-breeding, bee-keeping, poultry-keeping, etc.; (*b*) fruit and flower-growing for profit; (*c*) landscape gardening, arboriculture, forestry, the management of estates as employers and employed; (*d*) also the encouragement of working amateurs.

To this might well be added the words of Monsieur Henry, of the Societé Centrale d'Agriculture, at Brussels, speaking of the Union: "It has practical and social tendencies; 1. To afford enlightenment on the methods of different countries in the agricultural work of women; 2. To make popular such operations, and to retain the young girl in the country, and to provide her there with an honorable means of gaining her living." He also said of the woman taken from town to the country: "She will like it or she will be bored by it; she will only like it on the day *she learns to understand it.* If we could keep the women in the country, it is probable the men would be found there oftener. The projects you have introduced to us under this International Agricultural and Horticultural Union are vast, and their possible utility incontestable."

Meanwhile those who desire to register names and industrial interests will please send to Mrs. Emma Shafter-Howard, corresponding secretary, 1206 Alice Street, Oakland.

RANCHO DEL FUERTE, AND ITS LESSONS.

By MRS. JOHN S. DORE, of Fresno.

The first thing learned from the purchase of this ranch of two hundred and twenty acres was the importance of water. This lesson the padres tried to teach by example. You never find an old mission on a dry hillside, but their American successors have had to learn that land in Southern California without a good water right is of very little value. Another thing also learned was that water is an expensive thing to go after or to develop, so that the first thing for an intending purchaser to look out for is to see that the water is already on the land, that it is abundant, and that the title is unassailable.

Next in importance to the choice of land with water comes the selection of suitable products. Here the custom of the neighborhood is of great assistance. If the soil is good for trees, then what shall be done to supply interest and tax money while the trees are growing? If the trees are far enough apart and the land heavy enough, the choice of crops to be planted between the rows; if not, how much land must be set apart for these requirements? All this has to be gone into very carefully.

On the ranch from which these lessons were learned pampas grass, pop corn, and alfalfa were the temporary crops to be depended upon for living expenses while the walnut trees were young. And it proved that pampas grass paid well and soon, but was hard on the soil; while alfalfa was of direct benefit and enriched the land.

The benefits of this experience of course are for women exclusively, since they are the only ones who admit they need it. But this attitude of humbleness in a woman is sometimes of advantage. When she goes forth in a rural community to make inquiries from her neighbors she will find that they often tell her the truth about what she wants to know. Whereas the man new at ranching will nearly always assume that he knows it all, by intuition no doubt. This attitude gives great joy to the countryman. He never fails to make the most of his opportunity, and the stories he tells are only limited by his hearers' gullibility.

In this quest of knowledge it was learned that opinions are often of great usefulness, advice almost never; because it has happened that enthusiastic but unwary women have been led into wasting their substance on costly experiments, from which the men of the community have derived great benefit without expense to themselves.

In starting out to run a ranch one must be very certain as to finances. It is a safe rule never to borrow money unless to put into the land upon which it is borrowed. This is approved of by money-lenders, and gives the person following it better financial standing. It is also well to state that everything in perfect order helps one's credit wonderfully. The usual idea of a woman's farm is gates off the hinges and everything run down. Such a ranch is not considered a valuable asset. Good housekeeping habits are quite as important out-of-doors as in.

This leads on to the hiring of laborers. A woman who has had infinite experience with cooks and waitresses will find the same problems with orchard hands and stablemen. General inefficiency on the one hand will be matched by lackadaisical methods on the other, and the woman gifted with generalship will find ample opportunity for its application.

But whatever a new husbandwoman determines to do, if she is going to get the benefit by observation of what others have done, she must use reason and experiment in adapting the results to her own needs.

There are scores of don'ts in the business of horticulture; they begin with plowing and planting and lead through irrigation up to pruning and harvesting; and the beginner will be almost sure to get things wrong. Whether there is any text-book of sufficient scope available for immediate use I know not. The university horticultural course may be good, but it requires four years; the horticultural paper is often valuable, but expert testimony from professionals is frequently worse than useless; so one is forced to fall back upon cultivation of judgment and the development of native intelligence to steer one clear of pitfalls.

The first three years spent at Ranchito del Fuerte were busy ones indeed. Between sixteen and seventeen thousand plants and trees were planted, most of them by a faithful old Chinese gardener called Jim. The trees were chiefly walnuts, and should the rows be placed side by side they would reach twenty-five miles.

If there is one trait common to all Southern Californians it is certainly satisfaction with one's own land. This is certainly true of the denizens of Ranchito del Fuerte. This ranch lies on the southern slope of the Puente Hills, once within sound of the breakers of the Pacific Ocean before the trees grew tall; and overlooks the valley of the San Gabriel River. Across, at the point of the gap made by this stream through the hills on its way to the ocean, lie the ruins of the first San Gabriel Mission, from which comes the name of the valley and river. About a mile below our ranch stands the old mansion of Don Pio Pico, the last Mexican Governor of California, by whom all the land in the neighborhood was once owned. It was the smallest and favorite of all his great ranches, his ranchito, and a small part of this dear "little ranch," which then comprised about eight thousand acres, he sold to its present owner. Since 1832 the old Don himself and ourselves have been the only ones in possession. There is indeed one spot on the ranch which has never known a plow until this day.

The valley through which the San Gabriel flows is likened by travelers to those rich valleys of the Orient, especially Palestine. The Oriental corn, wine, and oil are known here, only with a difference. Of corn we chose that with the Indian understanding, the vineyard is fading into the alfalfa field, while we dig for oil instead of growing it; and the olive tree gives place to the orange, and the fig to the walnut.

Our Puente hills are filled with petroleum, for to the east lies the famous Whittier oil-fields, and their derricks take the place of cathedral spires.

We had a chapel once connected with the old gubernatorial mansion, but the derrick is the thing now suggesting worship which is allowed to stand. This chapel, with its frescoes and chime of bells, was given to the roadmaster to make a culvert out of, so that now those going to Los Angeles by the carriage road literally travel over historic soil.

The old mansion of the Governor barely escaped the same fate, but it is now being watched by the Southern California Landmarks Club, and will no doubt be preserved from vandalism.

Across the river on the bluff or mesa is a battleground where was fought the battle of the San Gabriel, and where howitzer shells have since been picked up.

So it is to be seen that in beauty and fertility, romantic interest, and plain every-day utilitarianism, Ranchito del Fuerte is not behind other places contained in our happy valleys of the South Land.

CALIFORNIA WILD FLOWERS.

By MRS. LUCY E. WEISTER, of San Francisco.

There is an important feature in our favored State which is often overlooked in the anxiety to make this the most famous locality for fruits and grain and big trees. We are vain over our acreage of cereals, and swell with pride at the statistics of our orange crops and the product of our orchards and vineyards, while we are prone to ignore the beauty of nature spread broadcast on every hand. We worship at the feet of our great acreage, and forget the generous flora that has enriched our Coast with one of its greatest attractions, whose gifts are free offerings and embellish our land in a way to inspire poets and elicit praise from all, while her sister goddesses must be coaxed and flattered and importuned.

But I will leave it to the fruit-grower and farmer to discuss soil and climate, planting and pruning, battling with pests, and relative methods of thinning and gathering, curing and marketing, and will just give a little plea for the fair but frail creatures which give our landscapes their greatest charm—the wild flowers.

This is a subject worthy of attention, not only on account of the beauty of many of the species, but because there is danger of their becoming extinct. Our valleys and hills, and even the cañons, are being encroached upon to the dire destruction of Flora's beautiful children, who turn up helpless faces to the unfeeling plowman as his horses trample them and the sharp steel severs them from their roots, leaving them to wither and die. It is always painful to witness such a scene, and I have longed for some great-hearted, generous spirit to come forward and propose a plan whereby at least some of the finer varieties might be perpetuated. I believe, however, it belongs to the many and not to the few to accomplish this. If all who take jaunts in the spring-time or trips to the country during the summer would make it a point to secure all the specimens they could, carefully getting the roots or bulbs and transplanting them, they could by degrees make a choice addition to their gardens and conservatories.

From our indifference the years go by and the voiceless appeal is going up from hillside and valley, and our beloved wild flowers are perishing.

The hills surrounding our city afford a greater opportunity than is generally appreciated for procuring a large number of varieties. I have gone out in the morning and returned before luncheon with more than twenty well worth perpetuating.

San Rafael, Sausalito, Belvedere, Haywards, Berkeley, and many other places available for a day's outing possess great possibilities in regard to wild flowers of varied excellence. Quite a number of these are comparatively easy to procure, and grow very readily when removed from their native soil to the garden. The tops may shortly die, but if left undisturbed the roots and bulbs will reappear and frequently grow to be as healthy as when in their homes in hill and dale.

This is the case with the aquilegia (columbine), a flower of rare attributes, which deserves a place of prominence. It might well be adopted as our national flower. There are many points in its favor for this honor. It is beautiful, graceful, and unpretentious. It flourishes naturally in all parts of the United States, whether found on mountain top or in the valley, and even its name suggests the bird of our country.

Many varieties of wild flowers may be obtained from the seed; but that is difficult for people living remote from the habitat of the flowers. A good way is to interest some one living in their locality to watch and gather the seeds and bulbs when they are mature.

Many of the lily family, including brodiæa, fritillaria, trillium, and the superb calochorti, take transplanting very kindly.

There is a long list of varieties desirable for the garden, including godetia, larkspur, pentstemon, cypripedium, azalea, nemophila, dicentra, calandrinia, castilleja, clintonia, collinsia, clematis, cillia, dodecatheon, the charming viola pedunculata, the beautiful iris, and many others. Some of these have already been adopted by Eastern and European gardeners. Why not take some means of preserving them, and not have to send abroad for our supplies after we have exterminated them at home? We all, of course, want Eschscholtzias—or shall I say in plain English, "California poppies"? No collection of wild flowers, I should say no California garden, is complete without this glorious flower with its soft, dainty foliage and incomparable, golden, cup-like blossom. Fortunately for us, it is easy to grow. The seeds may be procured by gathering the pods while they are still green and placing them in a deep vessel to retain the seed when the pods become dry and burst open. The poppy may also be transplanted with success, but it requires great care, unless the plants are very young, for the large plants have very long tap-roots, which if broken will cause them to droop and die. But one good plant in your garden will soon seed your premises and supply your neighbors.

There are many people living in the country surrounded by wild flowers of which they take little heed, so common have they become to them, so they allow their workmen to uproot and destroy the dear little creamcups and graceful brodiæas. If they would only set aside some neglected corner of their dooryard and encourage their children to collect and care for all the varieties in their vicinity, they would be doing themselves a favor and their State a benefit.

What can we do to interest the people in this important subject? Can we not prevail upon some millionaire to purchase a large tract of land, including hills and valleys, and set people to gathering seeds, bulbs, and plants from all over the State and placing them where they would have congenial environments? In the meantime, let us as individuals earnestly exert ourselves to do all we can to preserve the wild flowers.

RANCH LIFE IN CALIFORNIA.

By MRS. EMMA FOX, of Lemoore.

"I look away; no green thing gladdens
My weary eye—no flower, no tree—
Naught save the earth the sagebrush saddens,
The scorched gray earth, that sickens me."

How vividly these lines recall primitive ranch life in California? I have in mind the experiences of a family who left the cultivated East to follow a dream of unprecedented good fortune, fabulous wealth, and abiding health, to the idealized Golden State. Came as thousands of others, with the one idea to reap speedily the magnificent harvests, appropriate the nuggets that were no doubt scattered broadcast, only waiting for New England thrift to gather them in, then return, to enjoy in affluence advantages left behind.

The promised land was reached in the glorious springtime, which "found a land of beauty, and left a paradise." Nature's entrancing panorama, the coloring furnished by wild flowers and waving grasses, was at its best. The land that, magician-like, was to furnish the princely fortune, was purchased from the Government, free from the desecration of polluting hands. The intoxication of the ideal surroundings would have made the absence of neighbors not noticed, but the deluding influence of the mirage made the prohibitive distance a lie. The broad, level plain, all ready for the plow, stood in such alluring contrast to the limited, timber-encumbered tracts of the East, that called for so much time and labor before a crop could be thought of, that the work was entered into with courage and enthusiasm. The venture proved the "castle in the air," the "love that never runs smooth." The crop was put in with true Eastern skill and care; it burst forth in blossom in a most satisfactory way; but the castle fell in a single night. One morning a tremendous herd was discoverd browsing on the well-tilled acres; the result of the labor of months had been swept away in a breath.

The battle then began between agriculturists bending every effort to make the most of the country, and the factor with a barrel of money to control legislation in its own interest, and the burden of fence-building was confronted.

As calamities never come singly, another enemy soon came to the front with its destroying qualities. The remnant of the crop, rescued by eternal vigilance from the invading "herd," soon succumbed to the mericiless rays of the scorching sun. The scenes of bewitching beauty of a few months ago had given place to a brown and arid waste. Neighbors who, under the deceptive atmosphere of spring, could be seen in their own dooryards, now in the glare of the midsummer sun had so retreated that the houses themselves were hardly visible, and the cool courtesy that pronounced the doubtful welcome to their grazing land, not felt under the promise of prosperity, cut now like a two-edged sword.

The case was thoroughly disheartening; the abandonment of it all and a return home was the impulse; but where *was* home? The one time home had been given up for the new venture; there was no money to reinstate it, and too much pride to return to the old stamping ground to begin anew.

Fellow men are none too prone to show the bright side to the unfortunate, so they were greeted on every hand with the assurance, "It is ever thus; sooner or later, if you cast your lot in California, you will come to bedrock."

These apparently hopeless conditions, as is often the case, proved blessings in disguise. The very poverty, poetically called bedrock, and the innate pride that resisted despair were the salvation of the State· Had it been left to the resources of the indolent element found here, its possibilities would never have been known.

This family was only a type of the many who followed. The energy born of the necessities of the case, guided by Yankee pluck and gumption, blazed the way to success, and, when supplemented by the lavish gifts with which nature has supplied this part of the country, that success was made doubly sure. It was not reached at a bound nor by rose-strewn paths. It was a world of experiment; everything had to be learned; new methods had to be employed; but its development and growth were truly typical, for mistakes were made only to be corrected, obstacles met only to be overcome. One of the most stubborn of these was the entire lack of the home-making spirit. Among early settlers the feeling prevailed that California was the place to make money, but not to spend it. Because a family would not freeze in a shanty, a shanty was considered good enough; the artistic was lost sight of in the great race for wealth. As a result, rural districts were most uninviting. It was only when home-loving settlers found that they must stay, and had done work enough for the adopted country to feel it was their own, and its climatic smiles had won their love, that such barriers were beaten down and the fashion of good homes established. And now the ranch homes of California are no longer isolated or unattractive—"the wind has been tempered to the shorn lamb." The widespread orchard and vineyard and tremendous acreage of pasture lands have absorbed and mellowed the heat of the sun, and made the blighting sandstorm a thing of the past.

Ranch interests have kept pace with the progressive spirit that pervades all the undertakings of the State. The petty details that have characterized other new countries, making life a grind, keeping each faction in its own little rut, have been eliminated, which has left every member of the family time to cultivate the inclination for the proper rounding-up.

If the head of the house is taken away, the business is not paralyzed for want of a leader. I have in mind a home left greatly involved at the husband's death. The widow stepped into the breach, by judicious management paid off the indebtedness, saved the home, and made it a shining mark in the neighborhood. It is one case that serves as an illustration. But we are not here to show especially what women are doing. Another home, where it has been my pleasure to be entertained, furnishes testimony in favor of country homes. It is situated ten miles from the trading point, but a telephone line brings it in direct communication. It is approached by an avenue lined with stately trees; the grounds are a bower of beauty and the house a haven of hospitality. The walls are hung with pictures that would do credit to any art studio in the State, the product of the hostess's brush. She showed hundreds of dear little chicks, just released from the incubator that she had sole charge of. She is also thoroughly conversant with the management of the ranch, whose acres number thousands. Through the daily papers, magazines, telegraph, and telephone, the country home is in direct touch with the pulse of the world. I can not refrain from saying that the daily paper, with its corrupting sensationalism, is not the important factor in the ranch home that it is in the city home.

Educational advantages are no longer monopolized by the great centers, and the inmates of the country homes have more time to appropriate them, being exempt from the diverting temptations of the social whirl of the city; in proof of which we point to the front ranks of our colleges, which are so largely recruited from the country homes. The bone and sinew of the professions, which are so preëminently a part of the machinery of the city, is largely furnished by the rural districts.

Although we have made great strides, Utopia is not yet ours. It is claimed that nowhere is there the same opportunity for successful agriculture as here. There is need of it, for there are many leakages that ranchers themselves must overcome. They have not yet awakened to the importance of combination. Ostrich-like, with heads in the ground, they have worked to the one end, each individual making the most of his own ranch, and have not seen the danger closing in upon them. They have, in their single heartedness, been led like lambs to the slaughter, and have awakened only after ranches were mortgaged to further the plans of the schemer. Irrigation canals have been foisted upon irrigation districts at four times their construction price. District taxation, under a law created for the purpose, has increased the rate in some instances two and one half per cent. But these ranchers are being converted slowly to the necessity of fostering the institutions that keep their products within the boundary of their own protection, and of eliminating the power of the speculator. But when the next step in this line of evolution is taken, and the ranchers of our State have learned to stand together and trust their own, as do railroad and other corporations, then we shall have a solidarity that will fulfill the prophecy, and we shall be the empire State of the Union. One historian has said, and we may reiterate, "There is but one California in all the world, and the world is beginning to recognize it."

NECESSITY FOR AGRICULTURAL EDUCATION.

REMARKS BY JULIA SHAFTER-HAMILTON, OF MARIN COUNTY.

My ideas on farming are purely practical. I was left some eight years ago with 16,000 acres of land in Marin County to look after, and the conclusions I have had to reach were reached on a practical basis. I studied and learned and tried to understand. The Shafter ranches at Point Reyes are well known to all men interested in cattle in California, and I speak from the standpoint of a large landowner who sublets, and not as one running his own property. One of the most serious questions with us is how to get men of superior knowledge to run ranches. What is the use of acquiring these superior conditions, if we can not obtain men of superior knowledge? When I took my ranches I had to depend almost altogether on the peasantry of Europe, but I think we ought to bring our own children up to agricultural pursuits. Men are too anxious to get the money out of the land and expend it on the education of their children along professional lines, and are not willing to return anything to the land through the same channels—the education of their boys in agricultural pursuits. It was too easy at the start to extract the money from the land, and thousands of dollars have been taken from it and turned into channels where none of it would return to the land. Boys have been taken from the farms and educated and employed in the cities in less remunerative, and in my judgment far less dignified, callings, for where is there a life with more freedom or more dignity than that of the farmer? Gentlemen, what are we to do in order to bring men of capital back to the country, where they will not be handicapped for lack of funds, in order to bring back the productiveness of the soil? Why is it that most men with capital are putting their sons into the overcrowded professions and mercantile lines, where there is so much failure, and where certainly the conditions do not bring about as normal, as healthy, and as dignified a life? Why are they not teaching them that from which they often have sprung? My father made his money in his profession, but then returned to the occupation in which this rising generation's fathers were interested. Why is it that more gentlemen don't do this? No one who lives in the country and is making money there can help knowing that there is no education too high or qualification too fine to be taken back there. It pays so much better than any other business, if we go about it with the same interest and put our money back into it. Why are men satisfied with such miserable, contemptible lives when they are in a crowded city, when they can have cleanliness, breath, and dignity just outside of the smoke and fumes of the city? I am a city woman myself, but I would not choose the city again. It is a place you can always come back to when you desire it. These landowners should go back to the country and manage their property themselves. Another thing you city farmers should do is to take a human interest in the tenants you have on the farms. It can not be that all the New England farmers are dead or that they are multimillionaires, yet why is it that they don't come and run the country lands as they used to? I have had a hard time in getting help, and more of late years I have favored the Irish Protestants, because they are fine farmers and fine dairymen, and on a whole, good workers. I have got a great many men from the County of Lemar, and find that they have very thoroughly learned what they know. The time of the embryonic state has passed and the time for growth has come, and I believe that if more of the city people would go to the country we would meet on a common ground and both be better off.

MAKING THE MOST OF OUR FRUITS.

By MRS. W. N. SHERMAN, of Fresno.

The papers of to-day have covered a wide field, carrying us back to the women who have won victories in the past. Those treating of the present have told us how to make the ranch pleasant. It seems to be left to me to look into the future. We women can do a great deal to make the ranch profitable by adding to the beauty and finish of the goods prepared for the market. The men are skillful in tilling the soil and in pruning the vine and tree. A few—a very, very few—market the products of the ranch in an artistic package. The most of the fruit-growers merely dump the magnificent fruit into packing-boxes, jolt it into town on springless wagons, often over dusty roads, to be handled by the commission packers and thrown into packing boxes; and if it were not for the railroad inspection, it would be loaded with equal indifference into the cars for Eastern transportation. I used to think it was dishonesty that made this careless packing, but as time has passed I am more and more convinced that it is want of knowledge and the carelessness in little details which are characteristic of this State. We all know that it is easier to hire a good man to drive an eight-mule jerk-line team than it is to engage one who will plow with a single horse in the vineyard, for even our laborers do not like small things. This same spirit enters into fruit-packing.

Personally I have found it impossible to pack the Emperor grapes up to standard without being in the packing-house myself. Personal oversight increases the selling prices from $100 to $500 per carload. Surely this is good pay for two days' work. When not there the packers will slip in fruit that makes me blush when I overturn a crate to inspect their work. What can the Eastern buyer think if he receives such fruit under our brand?

Another serious fault is the crowding of the packers to put up so many boxes or crates in a day. Of course it is possible to have girls who are heedless and also slow; drop these out at once, but never try to drive a woman who is doing careful work—she should be treasured.

All fruit needs careful handling from the beginning. In hauling grapes from the vineyard to the packing-house, we use the large raisin sweat-box, putting two inches of long alfalfa hay in the bottom of the box, then a large sheet of raisin paper. Each bunch is laid down carefully on this soft nest, and only one bunch in depth, so that the bloom is perfectly preserved. The boxes are hauled on spring trucks to the packing-house, and piled for the next day's packing, usually twenty-four hours being allowed for the stems to toughen and lose their crispness. The size of these boxes makes it necessary to have two men to handle them to prevent them from jamming.

The grapes reaching the packing-table, the girls first pick out the cluster fruit. Bunches that are absolutely perfect in size of berries, shape, and color, that weigh five pounds, are packed as Imperial clusters in quarter crates. The fancy cluster comes next in grade, and are only a shade less perfect. Next comes the regular cluster, usually bunches that, if they are red, have a few small berries, or that may be perfect as to berries, light or dark Emperors not true to color.

No bunch of less than a pound should go East. For this reason, we do not altogether favor the use of the form, as the temptation is greater to clip up the bunches in order to make a smoother facing.

These methods of careful picking and handling should be followed with canning fruit. The same careful handling, grading, and culling apply here, and after the fruit has been peeled and cored, the most delicate system of trimming and selecting should be practiced, in order to make the fruit of the highest possible grade and quality in its particular class, and to have the pieces uniform in size, color, and appearance, when it is emptied out of the can for sampling or inspection. We have found by experience that honest, careful, and artistic packing pays well in dollars and cents, and returns interest value, by way of increasing the quality and reputation of the brand. This experience refers particularly to the packing of table fruit, canned goods, olive oil, raisins, and dried fruits.

It seems to me that all the fruit of a ranch, be it much or little, green or dried, that is shipped East, should be packed by the grower. Greed should not allow him to lower the quality. He must remember that much of the complaint we hear from the grower of the low prices or no returns from the commission packer is really only natural, for the commission man must live, and as he receives his commissions before the grower is paid, he naturally will pack closely, and fruit that is really culls will go East at the grower's expense. I never go into the packing-houses in Fresno, but I am surprised at the poor fruit going into the pack. It pays to cull heavily all fruit for Eastern shipment. If we can do nothing else with the culls, they will do for the pigs.

Now, the question has been asked by several women how can I attend to this outside work and manage the housework also. Right there is a grave economic mistake that women make. They think servants are wasteful, and they can not afford them. There are many ranch houses in the San Joaquin Valley where we have eaten dinner and supper, where all were men, no women being within several miles. We have uniformly found good, well-cooked food, served in a clean way. If men can manage this way, why not women? If the ranch is large, the wife should help with the bookkeeping and packing-house work; in other words, be the general inside manager, and by her brains raise the standard of this work.

If we as women can not introduce cleaner and better work into the packing-houses and canneries of this State, there is little encouragement for us to enter upon the hard grind of a business life. If we can improve these conditions, then we have every encouragement, added to the highest of all, that of companionship; for the woman can enter into the cares and hopes of her husband with sympathy, and by this intelligent interest in a common pursuit round out a home life of usefulness and most perfect happiness.

MR. AIKEN. I move you, sir, that the sincere thanks of this Convention be extended to the ladies for their very interesting and effective presentation of the programme, which has been of such great pleasure and benefit and profit to us.

MR. JOHNSTON. I will offer the amendment that the papers be published in the report of these proceedings.

Carried by a rising vote.

REPORT OF THE COMMITTEE ON SAN FRANCISCO AND OTHER COAST MARKETS.

To the State Horticultural Convention:

Your committee, to whom was referred the state of the San Francisco and other coast markets, beg leave to report as follows:

In our opinion the present custom of selling fruit and produce in these markets is wasteful and unnecessarily very expensive, more especially in the following particulars:

First—The grower, at time of shipment, does not know the quantity of competing produce which his shipment will meet—resulting often in seriously overstocking the markets.

Second—He has no assurance of fair treatment at all times.

Third—The charges upon the produce for freight and drayage, owing to shipment in small amounts, is a serious burden in excess of the ten per cent brokerage; and added to this is the careless loss of boxes which should be returned to the shipper.

Fourth—The work of selling is now so complicated and conducted by such a multitude of brokerage firms that it may perhaps be doubted if these men can afford to do the work at much less than the present rate; and to maintain this, which they say is but a living rate, they have determined to coöperate, and are doing so most effectively.

Your committee, therefore, sees no way by which these evils can be remedied except by the coöperation of growers who ship to these coast markets. They alone must control both the distribution and the sale of their products, or suffer the present evils.

To this end we recommend:

First—That the growers form local associations in their several localities for taking charge of the assembling and shipment of produce designed for coast markets, to control as largely as possible the total output at such places.

Second—That these several local associations elect representatives, who shall form a central organization, which shall make such arrangements for shipment and sale as the interests of the producers may require.

We further recommend that a committee of five be appointed by this Convention, to promote the formation of the above-named organizations.

A. R. SPRAGUE.
F. M. RIGHTER.
C. GAINES.

Upon motion, the report was adopted by the Convention.

The Convention then took a recess until 2 o'clock P. M.

AFTERNOON SESSION—THIRD DAY.

THURSDAY, December 5, 1901.

At 2 o'clock the Convention reassembled. President COOPER in the chair.

REPORT OF THE COMMITTEE ON PRESIDENT'S ADDRESS.

The Committee on President's Address submitted the following report:

SAN FRANCISCO, December 5, 1901.

To the State Fruit-Growers' Convention:

GENTLEMEN: We, your committee to whom was referred the annual address of President Cooper, have had the address under consideration, and commend its careful perusal to the fruit-growers of California.

We especially emphasize the suggestions regarding the necessity of securing an appropriation from the next Legislature for securing parasites for insect pests, for revising the present horticultural quarantine laws of the State, and for pure food legislation, and would recommend that these matters be referred to the State Board of Horticulture for action.

President Cooper's reference to the Louisiana Purchase Exposition is timely, and we would offer the following resolutions:

WHEREAS, Preparations are being made for a World's Exposition, to be held in the city of St. Louis in 1903; and

WHEREAS, The preliminary arrangements and financial backing give promise that the said exposition will be one of the greatest and grandest in the world's history; and

WHEREAS, Past experience has demonstrated that under wise, economical, and experienced management participation by California in national and international expositions has proven profitable to the State, affording the most effective means of presenting our great resources and unequaled advantages to the inquiring world; therefore, be it

Resolved, That it is the sense of the fruit-growers of California, in convention assembled in San Francisco, December 5, 1901, that California should be adequately represented at the said St. Louis, or the Louisiana Purchase Exposition, and we earnestly invoke the united aid of the counties and of the State, and of all enterprising men to this end.

We would suggest the appointment of the following committee to carry out this purpose: General N. P. Chipman, Red Bluff, chairman; F. N. Woods, San José; H. Weinstock, Sacramento; A. H. Naftzger, Los Angeles; George P. Hall, San Diego; Frank Williams, Los Angeles; Senator S. C. Smith, Bakersfield; A. R. Briggs, Fresno; James A. Barr, Stockton.

The preservation of forests has received attention at the hands of the President of this association in his address, and we would suggest the adoption of the following resolution:

Resolved, That our members in Congress be requested to present an Act, and labor for its adoption, setting aside from settlement for homes all mountain lands unoccupied in the State of California, and restricting the devastation caused by prospecting for minerals and mining purposes.

In the address of President Cooper reference is made to the reciprocity treaties, and we would offer the following resolution, and ask its adoption by this Convention:

WHEREAS, The fifty-seventh Congress is now in session at Washington, D. C., and the lawmakers of the land will shortly be called upon to consider and ratify certain reciprocity conventions already entered into between the United States of America and certain foreign countries, and now refer particularly to the convention with France and Jamaica; and

WHEREAS, The fruit-growers of California and the Pacific Coast firmly believe that the ratification of these conventions will seriously injure the fruit, nut, and wine industry on the Pacific Coast, and that the fruit, nut, and wine industry at large in this country will be placed in jeopardy and seriously impaired by the ratification of the convention for Jamaica, signed July 22, 1899, which proposes a reduction in the present tariff of twenty per cent on citrus fruits; and further, the convention with the French republic, signed July 24, 1899, which proposes a reduction of duty, twenty per cent on nuts, ten per cent on prunes, fifteen per cent on olive oil, and a ten per cent reduction on preserved fruits and vegetables; and

WHEREAS, Fruit-growers of the Pacific Coast look with alarm upon the unratified conventions, fearing their ratification in the near future, in which event serious uncalled for and unwarranted damage will accrue to the fruit, nut, and wine industry, in which at the present time millions of dollars are invested; now therefore, be it

Resolved, That the fruit-growers of California, in convention assembled, do most respectfully, but earnestly and emphatically, protest against any and all reductions or changes in the existing tariff rates between the United States of America and the Republic of France and the Island of Jamaica, so far as they affect fruits, nuts, olives, olive oil, wine, preserved fruits, and vegetables; and, be it further

Resolved, That our representatives in Congress be, and are, hereby respectfully petitioned to use all honorable means at their command to discourage and prevent the ratification of these conventions as at present outlined; now,

Resolved, That these resolutions be engrossed and the copy forwarded to each member of the Pacific Coast delegation in Congress in Washington, D. C., requesting that this action on the part of the fruit-growers of the State of California in convention assembled on this 5th day of December, 1901, and that the action herein taken, be made known to the Honorable President of these United States and members of the United States Senate and House of Representatives.

We also ask the adoption of the following resolution on the Isthmian Canal:

Resolved, That this State Convention of the California fruit-growers, in session at San Francisco, California, this 5th day of December, 1901, impressed with the utter inability of the transcontinental railroads to handle the enormous and rapid increase in traffic between East and West, urge upon our Senators and Representatives in Congress the pressing need of adopting the recommendations of the Isthmian Canal Commission, and of taking immediate steps for the construction of the canal.

Your committee would also advise the passage of the following:

Resolved, Whereas, the priceless relic of an ancient civilization, known as Cleopatra's Needle, is now disintegrating and going to destruction in Central Park, New York, efforts should be made at once to secure its removal to California, where its safe preservation for the ages to come may impart the pleasure and profit of its contemplation for future generations, and where it may stand a unique and expressive exponent of the most valuable characteristics of the California climate;

Resolved, That the State Board of Horticulture be requested to bring the matter to the attention of the scientific associations and municipal authorities of California cities, as suggested in detail in President Cooper's annual address.

A. H. NAFTZGER, Chairman.

ROOM FOR THE SCIENTIFIC HORTICULTURIST.

ADDRESS BY BENJAMIN IDE WHEELER, PRESIDENT OF THE STATE UNIVERSITY.

The ultra individualism which tolerated and even loved the little rocky farms of New Hampshire and Massachusetts, and spent its toil in building stone walls that served little more purpose than stone heaps, has done its work and lived its day, and a glorious day it was. The old New England farmer depended for his information about what seed to put in, and when to put it in, and what to do with what came up therefrom, chiefly upon the half mythical indications of the Farmers' Almanac. It was a day of small things and narrow outlook. These farms, however, even if they did produce small crops, and apples very gnarly and very sour, availed to produce a type of men that have made themselves felt in the conscience-power of this whole land. I trust the broader, richer farms of this latter day and this more western land will not fail to produce and continue the stock of sturdy, honest, vigorous, upright men. Our schools and universities ought to have something to say about that, and I trust they are making themselves felt; but our purpose here to-day is to consider broadly the interests of the fruit farmers as producers of fruit.

The old New England farmer did not look to the State to help him in choosing his crops or caring for them. Indeed, there was very little the State could have done for him, except to sap his manhood. Everybody knows what the effect of subsidy is and would be under such conditions. There was very little, probably nothing, the State could have done for him. Agriculture and fruit-growing were practiced according to the rule of thumb. Some slender traditions derived from the forefathers—some of the traditions good, some of them bad—served to make up a body of lore by which those fine old farmers conducted themselves as farmers. In these latter days men have come to see that the processes of farming and fruit-growing are just as properly subjects of scientific research as any of the phenomena which swarm about in the universe. The unaided hand of the New England farmer on his little farm could not have maintained an agricultural chemist or botanist; but when the farmers put their heads together and their hands, and interested the National Government in encouraging and aiding study which should take into account the necessities and opportunities of all the farms put together, there rapidly developed in itself a body of scientific knowledge which could be readily adapted to the uses of the men on the farms. This procedure has in nowise transcended the proper scope of the mission of the National Government. It already attends to rivers and harbors, striving, by making the rivers navigable, the harbors safe, to provide a general field and opportunity within which the individual life of the man of business and commerce may be advantageously spent. The Government has as its mission, by providing order, security, and a general open field, to give just such opportunity to individual life. It takes cognizance of interests and materials which exist on a scale too large for individuals to control. What the Government has done in the matter of rivers and harbors, canals, light-houses, etc., sets the standard and affirms the principle for other activities of men outside the range of commerce.

Germany has led the other nations of the world in appreciation of what science can do in promoting the interests of different departments of business industry. Germany's present commercial advance is directly traceable to the scientific activities long cultivated in the obscurity and quiet of the universities. Not until a solid foundation was laid in genuine scientific method and result was the application of the results attempted. We used to think Germany a land of idealists and romancers and bookworms; but Germany developed, through its men of ideas and men of patient toil at books and in laboratories, a standard of scientific work which made possible, when these sciences came to be applied to the plain things of life, a tremendous forward push in manufacture, forestry, agriculture, and almost every form of practical art, which had distanced almost with a spurt every near competitor. England has been losing in the race of recent years, not from lack of capital, not from lack of commercial opportunity, not from lack of honest and industrious men, but almost exclusively from over-confidence in amateurism. England has retained the services of amateurs in its army, in its governmental positions, in its manufacturing interests, and in the various departments of the arts to such an extent that it now on the sudden wakes up to find the age has sped away from it. Germany has been in the habit of using inferior materials in manufacture, and has in general catered to an inferior market. As long as it turned its attention chiefly toward Asia Minor, South America, the East Indies, England felt little solicitude; but suddenly it has burst over the barriers and its products are entering the best markets. The advantage which Germany has in this last stage of the race is traceable directly to the employment of expert workmanship in the arts of specialists, in the specialized lines of industry, and to the use, frankly and fully, of the best scientific results attainable for application to any work that is to be done.

We have been reluctantly following in the wake of Germany in this matter of recognizing expert service and scientific information. The American, in his fine admiration for all-roundness and gumption, has been all too unwilling to vacate the throne of all wisdom concerning all subjects. The expert, whether it be in business matters, in political matters, or in matters that belong properly in the domain of science, has been too slowly given a hearing. The average American thinks he is competent to hold any office to which the people may elect him, and to enter at a moment's notice upon the completest exercise of its functions, whether that office be surveyor of highways, inspector of milk, member of the legislature, or ambassador to the Court of St. James. There is a good side to this, and I sincerely hope and pray that gumption may never cease to be numbered among American virtues. If, however, we are to take our place as competitors in the modern industrial race, we have got to recognize the expert and the scientist. California has great interests at stake. Thirty to forty million dollars a year is the value of its fruit crop. It will not be many years before enlarged markets, vastly improved methods and opportunities of transportation, and fuller application of scientific knowledge to practical fruit-growing will make this crop worth two hundred millions in place of thirty. What science can do for horticulture it has only just begun to do. We still rely too much upon the old *laissez faire* methods of natural growth. It is so easy to settle down into the comforts of fatalism and urge that things will work themselves rightly if we only give them a chance. Let the rains descend, and the winds blow, and the sun shine as God intended they should, and intends they shall, and things will grow of themselves; but there is a higher philosophy than that of evolution which works in the affairs of men—it is the philosophy of will, the intervention of the energized and enlightened will of man whereby he shares divinity with the gods. A Burbank who bends nature to his will is the representative man according to this higher philosophy. It is the business of man to subjugate nature, to shape it to his purposes, and to bend it hither and thither. But what we will control we must first know, and the first task of the scientist who through his studies will lend aid to those who gather bounty from nature, is to discover the secrets of nature, her secret ways of living, her secret habits of feeding, her secret methods of growth, and then he must turn these prejudices and preferences of nature to his own uses and purposes, just as the wise and far-seeing always play with the ignorant and short-sighted, and by a law written in the face of the universe must always do.

While I am urging a very great extension of confidence in scientific work and advice and leadership I am not overlooking the abundant good which science has already rendered to the interests we here represent, especially to those interests as represented in California. The problems confronting the horticulturist here are evidently in some measure distinct from those in the eastern portion of the country. We have recognized that the climate and the soil require special study, and compel us to special processes. The investigation of our soils on both chemical and physical lines which has been conducted for a series of years, chiefly under the leadership of Director Hilgard, have brought results the value of which it is not easy to measure. Scientific investigation has been utilized to show on the basis of rugged scientific tests that California fruits are larger, handsomer, sweeter, and endowed with better keeping qualities than fruits grown elsewhere. All these are on record in the tables of chemical and physical analyses, and are raised beyond dispute. Science has done much in directing men toward the proper use of different soils. Some are better than others, some are suited for fruit-growing, some are unsuited. Many a man has been spared disappointment and loss by being warned that a certain soil was not suited for the trees he proposed to plant upon it, when, without the determinations which chemistry alone permits, he would have been unable to protect himself through observation of any surface appearances. The investigation of climate and water on a scientific basis has done much, and will, when carried further, do much more in determining what particular localities are suited to what class of products. It is furthermore only a few years since the weather observations attained sufficient scientific accuracy to be worthy the heeding of fruit-growers. To-day I venture to say no wise man engaged in such pursuits fails to closely watch the weather prognostications, particularly when frost is in the air. We are but in the beginning of these things. It is within the memory of most of us here present that these attempts to bring large ranges of facts together and combine them by the observation of laws into what may be called results have had their existence, and surely we can not expect that this entirely new method of procedure in human affairs should have reached its completeness within a score of years. We are only at the beginning, we stand merely in the doorway. What science can do for human life, for industry has not yet been even dreamed of.

The cultivation of single lines of fruits and vegetables upon extended areas has given the opportunity for the development of all sorts of pests. Sin seems to abound wherever virtue is, and I have heard that the devil is never more active than when the cause of good is thriving. At any rate that seems to be the case with all forms of insect pests. The Colorado potato-bug used to have a hard time getting a living when he was obliged to tramp long distances from one potato vine to another; but when people planted the potato vines conveniently for him in rows, and by the acre, he throve, increased, and multiplied, like the children of Israel in the Promised Land. The bounty of nature seems always to be attended with troubles and dangers like these. Eternal vigilance is the price of safety. I think California horticulturists have all of them more or less cause to be thankful already to science for what it has done in helping them fight one pest or another. Only this past week we received word from Newcastle of the dangerous development of the peach moth in that vicinity. It is a new trouble and will require special investigation. The University has employed a man, Mr. Warren T. Clarke, who will be specially delegated to that task, and will spend a considerable portion of the next few months, if not the whole time of the next six months, in the work of finding out what is to be done, and, if possible, doing it.

I hear that the Eastern manufacturers of Paris green stand in high horror of those California scientists who have made it impossible for them to palm off their fine adulterations upon the California trade. They are now obliged to prepare, we hear, a special Paris green particularly for the California market. We owe to science, also, something in the discovery of beneficial insects. It was only through scientific study that there could have been found out what was the lack in our fig culture, and the introduction of an insect to distribute the fructifying pollen to the blossoms of the figs represented a service of surpassing value to this State. Chemistry has removed many of the difficulties in the canning and drying of fruits through explaining the sources of troubles, and providing remedies therefor. The problem of pickling the ripe olive has been advanced to solution through scientific investigation of causes which produced troubles therein. I was not, however, called in here to enumerate the things that have been done. There are few, I suppose, that know less about them than I do. What I am here for is to express to you my strongest and most enthusiastic confidence in the work that is now doing through the organized labors of the State Board of Horticulture and the Department of Agriculture in the State University, to uphold the hands of the fruit-growers of this State, and to advance and strengthen the industry which they represent.

SELECTION, NATURAL AND ARTIFICIAL.

David Starr Jordan, President of Stanford University, delivered a very instructive and entertaining address on the application of natural laws to horticulture, showing, by numerous illustrations, how animals and birds adapted themselves to their environment and changed their characters to suit their changed condition, and that by understanding and applying this natural law of evolution the horticulturist had been enabled to produce new varieties and improve old ones until we had attained our present high standard.

He prefaced his remarks with the suggestion that one of the most important functions of the State might be that of scientific research, investigating the nature of matters in which the attainment of the scientific knowledge absolutely necessary to success would be beyond the reach of the ordinary citizen, or even corporation. He gave as an illustration of this the inquiry into the nature of the cottony-cushion scale imported from Australia to California, which became at once so destructive to the fruit-growing interests. The investigation carried on by the State showed that this scale in its native country is devoured by a ladybug, the *Vedalia*, and this *Vedalia*, brought to California, has almost exterminated the threatening pest. Similar investigations seem likely to disclose the real nature and the natural enemies of the so-called San José scale, and Government investigations of a like nature, and legal protection, may be necessary to save the oranges of the State from the devouring grub so common in Mexico, and to save the English walnut from a similar pest in Europe. If these pests should become established in the State, as seems probable, it is beyond the power of an individual to fight them, and they can only be fought through knowledge.

The same rule applies to scientific investigation in many fields. Aristotle once declared it a function of government to do whatever is of common interest, and whatever it can perform better than individual enterprise is able to do.

Dr. Jordan referred to the process of artificial selection as used in the development of varieties of fruit or of breeds of animals. He detailed briefly the theory underlying hybridization and selection, as practiced by Mr. Luther Burbank, the great master in that art, and showed something of what can be done along the lines in which individuals vary.

He then showed charts illustrating the singing birds of the Hawaiian Islands, the thirty species or more being essentially alike in bodily structure, but differing in a most extraordinary degree in the form of the bill. It can be shown with great probability that these birds have all sprung from one stock and that that stock is some one of the numerous species of honey-creeper found in Central America. The honey-creeper has a slender, slightly curved bill, and birds of that type are still extant on the oldest of the Hawaiian Islands, Kauai. Then it can be shown, in accordance with the demands made by different substances on which birds feed, how this bill has become longer and longer, more curved, fitted for sucking honey from flowers, and finally changed into an extremely long, bow-shaped bill, suitable for probing into the depths of the leaf-cup of the Ieie-vine, and into the thick masses of lichen, in both of which places numerous insects are found. In still other birds the upper mandible has become exceedingly long and flexible, while the lower is cut off short. These birds pound on a tree, like a woodpecker, with the lower half of the bill and scale off the bark or knots, while with the upper half they draw out insects. The upper bill is used mainly as a probe. Still others have the bill short and thick; and others, exceedingly strong like that of a grosbeak, and capable of cracking nuts. Still others have the tips crossed like those of the cross-bill. Other highly modified forms have a bill as heavy and as capable of cracking nuts or tearing fruits as the bill of a parrot. These are adapted to the tough fruit of the Ieie-vine. Of each of these styles of bill there are numerous species, each island having some. The exceeding uniformity of the birds in other respects shows that they are variations of one common stock adapted to special conditions of food or special need in life. The relations of these birds have been worked out by Mr. Henry W. Henshaw, a distinguished naturalist living at Hilo.

MR. AIKEN. I move you, sir, that the sincere thanks of this Convention be extended to Professors Wheeler and Jordan for their able and interesting presentation of these subjects to the fruit-growers, and for the honor of their presence on this occasion.

Motion carried by a rising vote.

REPORT OF THE COMMITTEE ON TRANSPORTATION.

MR. R. D. STEPHENS, chairman of the Committee on Transportation, submitted the following report:

Mr. President, Ladies and Gentlemen:

Your Committee on Transportation beg leave to make the following report:

There can be no doubt that the improved service given to green deciduous fruit shipments this year by the Southern Pacific Company, and its connections, was of great benefit to the fruit-growers of California. The time occupied in transit being materially reduced, greatly aided distribution, and, by doing so, increased consumption. This has resulted in restoring confidence in the minds of the growers, who are again beginning to believe that fruit-growing in California, and upon a much larger scale than ever before, can be made to pay a fair profit upon the labor and capital invested in its production; *provided,* that the time-schedule agreed upon between the railroads and the fruit-growers, in May last,* *be put into full force and effect by the railroads,* the only party to the agreement that has the power to do so, and the elimination from the business of refrigerator cars that are owned and controlled by private interests.

We believe the private ownership and control of refrigerator cars used for shipment of California fruit to be inimical to the interests of the fruit-growers and shippers, as affording an opportunity for discrimination and favoritism.

All cars and other transportation facilities should be owned and controlled in every particular by the railroads, and all shippers should have equal facilities and be upon equal terms.

We, therefore, in this public way, record our earnest protest against the renewal or extension of existing contracts with the refrigerator lines now engaged in this traffic, or the making of any similar contracts with any parties whatsoever.

We make further objection to the private ownership and control of these refrigerator cars, as having the effect to maintain what we consider *excessive refrigeration rates.*

We feel that the Southern Pacific Company, and the other roads that are engaged in carrying California fruits, are entitled to the thanks of the fruit-growers of the State, for their efforts to give an improved and adequate service in the transportation of our fruit, and we therefore suggest that a vote of thanks be tendered them by this Convention for what they have already done in the way of an improved service, *thus showing that the fruit-growers of California realize and fully appreciate what has been done in their interests.*

Respectfully submitted.

R. D. STEPHENS, Chairman.

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*See copy of Wm. Sproule's letter of May 21, 1901, in Appendix.

SUBSEQUENT ACTION BY COMMITTEE ON TRANSPORTATION.

Statement of Facts from the Fruit-Growers to the Transportation Companies.

The Committee on Transportation beg leave to submit the following in support of the action taken by the growers in convention assembled:

The above shows the action taken by the fruit-growers of the State at their annual convention held in San Francisco December 3–6, 1901.

They are irrevocably opposed to the private ownership and control of the cars in which their products are shipped to Eastern markets.

They feel that the time has come when they should *be relieved from paying heavy tribute to this, the worst of all monopolies.*

There are no insect pests or blights so damaging to the fruit interest of California *as this control.*

Its power is so great as to subordinate all other interests, and when combined with the marketing, is absolute.

There is no power that can prevent such combination so long as *private cars have the monopoly of carrying our fruit, with a tariff that brings in such an enormous profit as does the present tariff* for refrigeration, for the reason that the large fruit companies are corporations, and there is no law through which the *transfer and control of the stock of such corporations can be prevented.*

This fact is mentioned for the reason that the railroad companies claim to be opposed to a combination of such a character, and we desire to show that the only way to prevent it is, not to enter into a contract with the Armour Company, or any other car line, for the reason that it would be easy for the car line with which the contract is made to soon gain control of a fruit marketing company by having a majority of the stock transferred to it, *or have it held in trust subject to its wishes.*

All the growers ask is to be put on equal terms with the refrigerator companies.

They do not ask for a greater per cent of profit upon the capital they have invested than that received by the car lines for the capital they have invested.

Refrigeration has been the bane of the fruit-growers of California.

It has done more to retard the progress and prosperity of this State than all other things combined, for the reason that it possesses the power to almost wholly, if not quite, control the marketing of its fruit products.

While it has been doing this for California, it has been *utilized to build up strong and powerful competition in Oregon and Washington.*

We are credibly informed that the charges for refrigeration from these States to the Atlantic seaboard are but from $10 to $17 per car. In some instances a higher rate is charged, but it is claimed that in such cases a corresponding reduction is made in the way of a rebate.

This explains why the fruit from Oregon and Washington can be sold in Eastern markets, *in competition with California fruit, at a much lower price, and yet bring a good profit to the grower.*

This has resulted in not only rapidly increasing and multiplying fruit shipments from Oregon and Washington, but also *in building up competition that otherwise never could have existed.*

Now that we have to meet this competition, all we ask is to be put on an equality with the growers of Oregon and Washington.

This can be done by the adoption of any of the following remedies:

First—*The ownership and control of refrigerator cars by the railroads themselves.*

Second—The granting of the right by the railroads to all refrigerator car lines of equal rights and privileges, to enter into competition for the business, with a reduction in charges to an amount that will prohibit the giving of rebates.

Under no circumstances should a contract be made with any company for a longer period than one year, and that, too, with *a distinct understanding that a very material reduction should be made in the rates now prevailing.*

The growers of California should be placed upon an equal footing with the growers of Oregon and Washington.

TIME-SCHEDULE.

In regard to the time occupied in the transportation and delivery of our fruit at Eastern destinations, *we reiterate all that we said in our memorial upon this subject* for the season just past, and earnestly pray that the time agreed upon last May between the growers and the railroad companies—*six days to Chicago and similar points, and nine days to New York and similar points*—be put into full force for the coming season—1902.

While California has no equal as a fruit-producing country, yet its growers can not successfully compete with the growers of other localities who are less favorably circumstanced, particularly those of Washington and Oregon, so long as private refrigerator car companies are permitted to control the marketing of its products as they have done in the past and will continue to do in the future if allowed to continue their present extortionate rates for refrigeration from California *as compared with the rates from Oregon and Washington.*

This we hold to be unjust discrimination against our growers, and therefore an impediment to the progress of the State.

While refrigeration has for years past held green fruit shipments from California in *statu quo*, it has been the *incentive for orchard planting in Oregon and Washington*, where the fruit area has increased several hundred per cent in the same period.

In conclusion we will say that, as a matter of fact, charges for refrigeration should be such as to cover cost only. *Then rebates, the key to control, would be made impossible. Profit for transportation should be in the freight charges alone*, as it is in the charges for other commodities that are shipped in box cars. Then there would be a reasonable profit made in fruit-growing in California, which would materially add to its prosperity.

MINIMUM CARLOAD WEIGHT.

We wish to especially mention the fact that the growers fully appreciate the action of the railroads in lowering the minimum carload weight from 26,000 to 24,000 pounds. There is no doubt that much good came from this action.

The Fruit-Growers' Committee on Transportation most respectfully submit the foregoing requests for relief, with the hope and prayer that you give them careful and favorable consideration.

Respectfully yours,

R. D. STEPHENS, Chairman.
A. H. NAFTZGER, Los Angeles.
A. N. JUDD, Watsonville.
ALEXANDER GORDON, Fresno.

SACRAMENTO, December 23, 1901.

[For correspondence between Committee on Transportation and railroad managers, see Appendix.]

MR. STEPHENS. Now, Mr. Chairman, before I have anything to say upon this I will state that Mr. William Sproule was extended an invitation to be present here to-day in person, to give us the reasons why the schedule-time promised was not carried out during the past season. I now move that Mr. Sproule be allowed to address the Convention at this time.

Motion carried.

REMARKS BY WILLIAM SPROULE.

MR. SPROULE. Mr. Chairman, and Gentlemen of the Convention: When I was asked to come here this afternoon I did not know that I was being asked to address you; instead of that I came here to be instructed by you, for no man can handle his side of the question intelligently unless he has a fair knowledge of the position of the other side. I understand, however, that all I am expected to do at this time is to be apologetical in my remarks as pertaining to last season's service. That is an attitude I don't want to be in; on the contrary, I would confirm what I said in my letter to Mr. Stephens, to the effect that I believe the carriers gave this past season a service that is the best that has ever been given in the fruit business. You will remember that we did some years ago experiment with limited trains on a 120-hour schedule from Sacramento to Chicago. We ran a few in ventilated cars, and thought that we did very well, and the growers thought so to, and this year we have done that, not with a few, but with a great many trains of refrigerator cars. The service on the line between Sacramento and Ogden has been maintained fully up to our expectations. The service on the line east of Ogden has been greatly improved, and the improvements could only be brought about by harping on the same string. We carried out the best service we possibly could, but the fruit was at times diverted to a line that was not giving good service. We told them that they could not get any more of the business until they gave the service. The strikes caused us a great deal of inconvenience. No one knew that the strikes were to come on, or that they would last the way they did. We ordered one hundred and three engines early in January, and the delivery was to be made in time to take care of the fruit business; they were not all freight engines, however. The builders turned out those locomotives as fast as they could, but not fast enough to meet the requirements. The foundation of the locomotive is the steel in it, and you could not get the steel when all the steel manufacturers were on a strike. You see those strikes were of much concern to us. In matters economic we are a united country, industrially as well as politically. The transportation of our freight was delayed, and it was only by persistently making the effort to secure, as far as possible, the segregation of the California fruit business from the general freight business, and treating it as a preferred and perishable freight, that results have been secured as you have found them to have been carried out. The prospects for the coming season I believe to be improved; we are now receiving locomotives more satisfactory in their deliveries than anything that occurred up to within the past sixty days. I have recently been in correspondence with every railroad to which we deliver oranges, with respect to their time and service. One of our communications says: "We have twenty-five Mogul engines just received from the shops that we are prepared to put on our western division to take care of your business." The carriers are particularly interested in California business, and they realize that the success of their business depends largely upon the prosperity of you growers, and they are willing to do all in their power to assist you. There is no kind of business in this State, or in any other country in the world, that affords such a variety of avenues of prosperity as does the fruit industry of California, and we are very glad indeed when we are able to rejoice with you in your having had a prosperous season, and to us it is a source of very serious regret when the season has not been prosperous. All I can say is that this coming season we shall aim to do our share toward giving you a service that will enable you to say, at the close of the season, if it was not, perchance, as profitable as you had hoped, that it was not the fault of the carriers.

MR. STEPHENS. I move that a vote of thanks be extended to Mr. Sproule for his attendance here to-day, and I wish to say that when you see Mr. Sproule you see a friend of the fruit-growers of California. I not only know he is a fruit-grower himself, but I know he has spent much time in securing from Eastern lines promises that have been of value to us.

Motion carried.

REPORT OF THE COMMITTEE ON THE OLIVE PROSPECT.

By GENERAL N. P. CHIPMAN, of Red Bluff.

GEN. N. P. CHIPMAN. Mr. President, Ladies and Gentlemen: I want to say with regard to this report, that when the subject came into hand for preparation there were two views to be taken of the question, or rather of the nature of the report. One was simply to make a summary of the findings of fact or the results without giving you the evidence. In the other form of report we embraced the evidence. You have had numerous communications from very high sources of results of observations of high character and of great intelligence, but they were merely the results and not the evidence; so it was concluded that you should have the evidence in this report. For the purpose of obtaining it I addressed, or caused to be addressed through the officers of the State Board of Trade, communications to a large number of olive-growers and manufacturers of olive oil and pickled olives, and this report is the result of the responses to those inquiries.

(In the preparation of this report letters were addressed to all the principal olive-growers of the State, and replies received from most of them. These replies are given in full in the report, but are too voluminous to reproduce here. From them, however, General Chipman makes the following summing up:)

Conclusions.—Having presented the evidence in the case, we are now prepared for deductions and a verdict. I have given you the testimony of about fifty witnesses, widely scattered over the State, nearly all of them growers, and most of them manufacturers of oil or pickles or of both. The time embraced reaches back a considerable period of years, with experiences and observations brought down to date. Upon some points there is a conflict in the evidence, on others an entire agreement, but the evidence in its entirety largely preponderates in favor of the industry.

When I began the investigation my mind was unfavorably prejudiced; my own experience and observations had raised a most serious doubt as to whether I should dig up my forty-acre orchard of Picholines, or graft them to some other variety. This investigation has determined the question, and I shall graft and not dig up the trees. Let us briefly analyze the evidence and put the results in concrete form:

First—*The Olive Tree:* It may be and is successfully grown in nearly every county from San Diego to Shasta, below 2,000 feet elevation, and even at that, or greater, elevations I believe orchards are thriving. It grows equally well in all kinds of soil; the yield and quality of the fruit depend on the fertility and adaptability of the soil, as must be obvious. The tree is not subject to nearly so many or so serious enemies, insects or diseases, as the trees of the old world. The chief enemy, the black scale, is easily overcome, and this insect is not particularly troublesome in the dry, hot atmosphere of the interior. So far as we know, the olive knot, apparently the most dangerous enemy now confronting us, is found only on foreign varieties, and has never been found on the Mission; and almost the universal opinion is that the Mission is the best variety for all purposes, irrespective of its probable immunity from tuberculosis. The statistics I have given you show that the yield per acre and per cent of oil in the olive are greater here than in Europe. Our methods of orchard culture and of oil manufacture are better and will bring the tree into bearing sooner than is done in Europe.

Second—*The Oil:* There is entire agreement that the chief impediment to profitable oil-making lies in the fact that adulterated oils are sold with labels falsely designating them as pure olive oil. I have shown you that the producers abroad are contending with the same unfair and fraudulent competition. I have shown you that in this State the law gives us ample protection, and that it is our fault that here, at least, we have not extirpated cottonseed oil and adulterated compounds put on the market as olive oil. How can we consistently ask other States, or Congress, to enact restrictive legislation similar to our own when we neglect or refuse to enforce the laws we have for our protection?

Third—*Pickled Olives:* I think it is no unwarranted deduction from the evidence that there is a wide market for pickled olives, especially ripe pickled olives, at remunerative prices to the grower and manufacturer. Here, again, the failures are traceable to ourselves. Is it too much to say that if A and B can pay, and are paying, good prices for olives and pickling them and selling them at a profit, others may not do so? A business should be judged by its intelligent successes, not by its ignorant failures. There is no reason for the existing conditions I have shown, that in Los Angeles the manufacturer is paying but $30 to $40 a ton for olives for all purposes, while at Oroville he is paying $40 for oil olives, and $75 for pickling olives. The Oroville manufacturer assures me that he can do well and pay these prices. There is something out of joint at Los Angeles. I am not surprised that the growers have formed an association for self-protection. Pickling both green and ripe olives, and, indeed, the manufacture of oil, is an art. There is also connected with that branch of the industry the mercantile faculty of finding a market. Is it to be supposed that each individual grower in the State, without previous experience and without the knowledge of how best to follow his fruit in all its stages, from the tree to the consumer in other States, can, single-handed, be entirely successful? It is quite probable that we may have to come to some such source as has been suggested by some of my correspondents, and establish in the several olive districts large plants to handle the fruit, either as an independent business or by coöperation of the grower. Nevertheless, I have given you evidence that at least two women are growing olives and pickling them and selling them with satisfactory results; and some men are doing equally well. The evidence is that in pickling olives the failures are attributable to ourselves, as usual. We have not all of us learned the art; we can not give the ripe pickled olive the keeping quality; some of us glut the home market with rubbish, and few of us have given the subject the careful and thoughtful consideration it demands. We have gone headlong into a business we knew nothing about, and we have expected that by some sort of inspiration our ignorance would be superseded by wisdom; and, now, we are seeking to shift all the responsibility for our individual failures on the American people, because they fail to give us rush orders for our oil and pickles. Neither the gods, nor the American people, are looking around to help those who will not help themselves.

In 1897 we imported 942,598 gallons of so-called olive oil. Notwithstanding Mr. Cooper's estimate of the possible output of all the trees now planted, it will be a long time before we can produce this quantity of oil, and when we do, if it is of good quality and is kept pure, we have the world for a market. According to Mr. Cooper's estimate, which I think excessive, allowing 100 trees to the acre, we have 25,000 acres in olives. I have shown you that in two districts of France there are 150,000 acres. In Tuscany alone there are 270,000 acres, and many times this acreage in other parts of Italy, where the total output of oil is stated to reach 90,000,000 gallons. When you consider the production of Spain and other olive countries, and that less than a million gallons find their way to the United States, it seems to me that with reasonable hope of ultimate success we can continue to present the olive industry as one of the many attractions of California.

I can not close this report without expressing my grateful acknowledgment to Mr. George A. Dennison, Acting Manager of the State Board of Trade, without whose intelligence and assistance in gathering the facts together I would not have been able to lay them before you. Acknowledgments are also due to Mr. Victor J. La Motte, Assistant at the State Board of Trade, for transcribing and otherwise rendering efficient aid in the work.

Upon motion of Mr. Sprague, the report was placed on file, and the State Board of Trade requested to print the same.

EVILS OF THE PRESENT METHODS OF SELLING THE OLIVE.

By C. A. WASHBURN, of Los Angeles.

It is safe to assume that most of us here in the olive industry have passed various vicissitudes and difficulties unnumbered, through the long years necessary to bring a commercial commodity into bearing. We have studied in the nursery varieties best adapted to our soil; we have watched with eagerness the result as each succeeding season passes, of drought or excessive moisture, too little or too much fertilizing, cross-pollination, and irrigation or not, and always the scale, and methods for its destruction.

The subjects here outlined have been scientifically and ably discussed before you, and practical results of theories advanced permit the assertion that anxiety can largely give way to the application of good judgment, to insure to us an article of commerce that the American palate is demanding more each year, and with the most prolific production California is unable to supply but a small proportion.

The uncertainties of a crop having diminished to a minimum, and the demand known to exist for a merchantable quality of it, bring us to a point when discussion of the evils of present methods of preparing and selling the fruit, and the remedies necessary, is the last and at present of the utmost importance.

The policy adopted at the beginning of this young industry will determine what degree of prosperity the grower is to enjoy in the future.

In law, an accessory to a crime can not waive responsibility; neither can the grower lessen his responsibility to this industry by supplying the trade with an inferior commodity, whether it be his individual production, or that of an incompetent mill man, whom he recognizes as equally incapable.

Experience has shown beyond doubt that the Eastern jobbers have lost confidence in all our processes of pickling, and well they may have, for each grower, or mill-owner, has an individual method, with results, in most cases, equally disastrous to the purchaser, when one can be found.

The question of proper pickling has not been satisfactorily solved by all, and will not be until *the correct* method is uniformly adopted; and until such time no extended Eastern market will be permanently open to us.

A secondary prejudice of the Eastern jobber is the instability of price—as a natural consequence when practically each manufacturer seeks a buyer at such figures as his circumstances dictate. An absurdly ruinous and exceedingly profligate expense to an otherwise profitable industry. Bear in mind that a merchantable article must of necessity be a satisfactorily finished product, and let us not deceive ourselves by thinking a solution will apply itself to existing conditions, without coöperation, both in preparing and in selling this product. This branch of the industry is seriously threatened, and each day's delay in applying a remedy makes the problem more difficult of a successful solution.

Trade responds more liberally in the oil branch of the industry, because of a more uniform quality; but the average grower is in this handicapped to such an extent by his dependence upon the public mill, that any possibility of a market above cost of production is problematical, and largely dependent upon the generosity of the mill man.

The effect is the same to the grower, whether each manufactures his own oil and sells it, as before referred to, or sells the green fruit direct to the mill and burdens the industry with a manufacturer's profit. In 1900, the public mill in Los Angeles, paying an average price of $50 per ton, for fruit delivered, was selling oil in bulk at $2.25 per gallon. In 1901, the mill paying $35 for the fruit, is quoting oil at $1.85, a depreciation of nearly eighteen per cent in the manufactured product, and thirty per cent in the green fruit; in other words, a profit of twelve per cent more to the mill in 1901 than in 1900, which, as a reserve, is sufficient to meet any possible competition this year from the grower who manufactures.

The depreciation of the raw material here is not justified, and a reason for which no condition exists, except an absence of organization and the non-application of business principles.

As a remedy, I would suggest a plan that guarantees to each grower, large or small, equal advantages of an enlarged trade connection at a minimum cost. More particularly I would recommend a subdivision of all territory into districts, the members of each district buying, or controlling, a suitable mill located at a common center, and by a directorate collected by them, controlling the management and expenses of that mill, and each paying such a price per ton for treating, as the directors may determine. The product of each mill to be under the control of an association manager, who shall sell the output to the best advantage, and report, less commissions, to the district mill, which in turn will settle with its members. Aside from absolute control in marketing the product, and suggestions from time to time as to the output, based upon trade demands, the association managers shall have no voice in district management. The manager shall be appointed by a board of directors composed of representatives from the different districts. This board of directors shall fix commissions, and shall have general direction, through the manager, of all sales. At the termination of the fiscal year, the association profits, less expenses, shall be distributed to the district mills, in such proportion as each mill contributes in value to the total sales of the association; and each district member, in turn, to receive from his mill his proportion, in the ratio that his product bears to the entire mill output. I have suggested here merely a basis for economical, effective, and coöperative management, which can be applied with little detail, and will enable us to get at the root of the evils of this industry, summarized, viz:

First—Absence of a good, uniform system in preparing our fruit;

Second—The excessive expense of selling individually the finished product, when manufactured by the grower, and the consequent instability of prices; or, the absolute subjection to, and dependence on, the dictates of a public mill;

Third—Absence of organization, whereby the grower is denied that close touch with the trade necessary to success.

The Remedy—Organized coöperation.

For the past three years the trade has paid the importer in Los Angeles from $2.10 to $2.50 per gallon in cans (depending on size of package) for what is claimed a pure quality of Italian oil. By the tariff act of 1897, an import tax of 50 cents per gallon was imposed. The tariff and the importer's price are the same to-day; but within the time mentioned the local product has declined from $3.50 to $1.85 per gallon, and always to meet foreign competition—an argument of the jobber that has not yet lost its effect upon the unsuspecting and defenseless grower.

It is my purpose, Mr. Chairman, to lay on the altar of this Convention the evils of our particular section, with a word of warning, if any there are who have not suffered from similar indiscretions, and to submit in all earnestness this question: Why is it, when the production of olives in America is practically confined to this State, with a protective tariff, and the law of supply and demand so pronounced in our favor, that we can not, by applying business methods, get the benefits we are now sacrificing, but to which we are so justly entitled?

PROF. HILGARD. I will say one word only in regard to the matter of olives. The Experiment Station of the California University has found that we frequently get samples of oils sent to us with complaints that they do not taste right; and it has happened that those samples are the pure oil, and that the oil they want is the adulterated oil. I am sorry to say that I have had on my table pure oil and adulterated oil at the same time, and the adulterated oil suited best. Regarding the pickled olive: A bulletin is now being printed on the subject, and it will be distributed. We have tried the methods of using strong and weak lye in treating the olive. Strong lye has proven not to be good, as it is impossible to get a keeping olive with strong lye. If you insist on shortening time by using strong lye, the olives will not keep. If the olives are cured slowly by repeating the use of weak lye, and especially if the additional salt is put in after the first lye is taken off, you will get better results. There can be no rules given about the quantities to use, because the olive that is irrigated differs from the olive that is grown without irrigation. The strength of the solution has got to be left to the pickler. With the weaker solution and using it oftener, we have found that at the end of thirty-two months the olives have been as good as they were the first day. You will get all of this information from the bulletin we are going to issue.

FROST, AND HOW BEST TO OVERCOME DAMAGE BY IT.

By PROFESSOR ALEXANDER G. McADIE, of San Francisco,
Forecast Official of the U. S. Weather Bureau.

PROFESSOR McADIE. Before taking up this paper upon the method of frost-fighting, I would like to say that I have visited a great many fruit ranches from Shasta to San Diego, and have heard a great deal of testimony along this line, during the past four or five years. Some of that testimony has been of this character: "Yes, I have tried smudging, and tried it well, too; and all that I ever got out of it was a heavy cold." I believe that under the weather conditions of the last ten years, we can carry our citrus and deciduous fruits through great deal colder periods with a loss of probably not more than five per cent.

With the possible exception of the loss occasioned by insect pests, there is probably no one cause of loss so seriously affecting crops in

California as frosts. Notwithstanding statements sometimes published, that certain areas are in the so-called frostless belt, there does not appear good reason for believing that any portion of the State may not be visited by frost.

The losses to the fruit crop, both citrus and deciduous, through frost, have been so large that special attention has been given to methods of protecting orchards; and these methods are discussed in detail in the following pages. With citrus fruits the frosts of December, January, and February are to be guarded against; the fruit being ripe and ready for shipment. With deciduous fruits the late spring frosts do the damage. Almonds, apricots, grapes, peaches, and prunes are hurt while in bud or while the fruit is just setting, by the frosts of March and April. The damage depends in all probability as much upon the condition of the tree as upon the degree and duration of the cold. For example, a sharp frost during the first or second week of April sometimes does less damage if the trees are fairly past the blossoming period than the same frosts would have caused occurring about the middle of March.

Attention is invited to the excellent table prepared by Mr. Samuel H. Gerrish of Sacramento, giving the dates of first and last light and killing frosts; also the dates of blooming fruit trees in Sacramento, from 1869 to 1901.

The protection of gardens, both vegetable and flower, is also important. The particular frosts affecting gardens are the frosts of February, March, and April, and it is pointed out in the succeeding pages that the same general principles used to protect orchards should be followed in the protection of gardens. A clear, still night, following thirty-six or forty-eight hours of boisterous north wind, is likely to be followed by frost, particularly if the movement of the air in the given locality has been such as to cause a settling of cold, relatively dry air strata in the hollows or depressions of the land. The formation of frost is essentially a problem in air drainage, and if by any means we can prevent streaks, pools, or basins of stagnant, cold dry air, we can largely prevent frost. Frost, as commonly understood, is the water vapor of the air deposited upon the plant at a temperature below 32°. The damage to plant life is, however, really caused by the falling or rising temperature, and not by the deposit of ice. The water vapor plays the part of an index only. Indeed, the action of the water is preventive. Dry air at a temperature of 32° weighs 563 grains per cubic foot. Water vapor at 32° weighs 2.1 grains per cubic foot at a saturation of 100 per cent. Air at a temperature of 25° F. weighs 572 grains per cubic foot. Given a little time, therefore, on a still, clear night, the loss of heat by radiation from the plant surfaces and the ground will bring about a settling of the colder air to the bottom. The ground will be covered with frost, while thermometers six feet above the ground will record 34° or 35° F. Vegetables and flowers, therefore, unless grown upon sloping or terraced ground, are at a decided disadvantage compared with tree fruit in the matter of frosts.

NATURE OF FROST.—It can not be emphasized too clearly that it is the low temperature and not the solidification of the water which does the damage. If there be but little vapor in the air there will be but a light frost apparent, and yet the temperature may be so low as to cause great injury. The so-called hard, dry frost, also called black frost, does, as is well known, even more injury than heavy frosts. Water vapor at 25° completely saturated weighs 1.6 grains per cubic foot. In the fall from 32° to 25° nearly half a grain per cubic foot, if the saturation were 100 per cent, would be condensed, appearing in visible form as frost flakes. A certain amount of heat was given off in the transformation of this visible water vapor into ice, and an exactly equal amount of heat (known as the latent heat of vaporization) will be in turn required to change this frost flake back into vapor. We give special attention to this point, because it would appear theoretically that the secret of successful protection of garden truck and delicate flowers will be found in this action of water, both in setting free heat at the time when the temperature is falling, and on the other hand in using up heat and thus acting as a retard or brake when the temperature begins to rise quickly.

It is now quite generally believed that as much injury results from the sudden warming up of the dormant and thoroughly chilled flower, fruit, or vegetable as from the chilling itself. In the work of protecting fruits from frost it has been found very necessary to interpose some screen early in the morning between the sun's rays and the frosted fruit. With flowers and garden truck this can be much more easily accomplished than with fruit. In this respect the gardener has a decided advantage over the orchardist. The following is an excellent statement of how the plant is injured:

HOW FROST INJURES PLANTS.—"Low temperature congeals the watery part of the cell sap and also the intercellular water content of the plant. Within certain limits this is not or may not be injurious, providing the protoplastic contents of the cell are able to absorb the water and do this before the cell structure collapses as a result of insufficient cell turgor. Frequently the frosting of plants is followed by a sudden rise in temperature, in which case much of the water which was part of the cell sap in the normal condition of the plant escapes through the cell wall into intercellular spaces, or even from the plant entirely, and thus the protoplasm of the cell, being unable to assume its normal condition, becomes disorganized, and decomposition follows."*

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*Professor E. R. Lake, in the Oregon Climate and Crop Bulletin, July, 1900.

Frost, then, *is primarily a matter of air drainage.* This principle is shown both in the general pressure distribution over the country during frost periods, and on a smaller scale in the motion of the surface air currents in certain small areas. In other words, the usual warm lower air strata are vigorously displaced by cold, dry air; and when the draining ceases and the cold air settles during the period of comparative stillness, frost forms. What is true on a large scale is true on a smaller scale, and a close agreement exists between frost belts or frost streaks and areas of stagnant, cold air. A careful survey should be made by every ranch owner. The writer has urged this matter, believing that each grower must work out his own salvation, and that besides studying and practicing methods of protection, it is necessary to be familiar with the air drainage of the ranch. On nearly every ranch that the writer has visited there have been certain well-marked cold spots, which, in most cases, were found to correspond with slight depressions in the ground. These three deductions can be drawn from what precedes: (1) Where the air is in brisk motion, damage from frost is generally light; (2) Stagnant air, such as exists in low valleys, basins, and inclosed areas, favors frost; (3) As the coldest layer is generally near the ground, it is sometimes advisable to drain downward upper, warm air, displacing surface layers.

METHODS OF PROTECTION.—Every fruit-grower should put himself in communication with the nearest center of distribution of weather forecasts. If possible, he should be in daily communication with some Weather Bureau office. Whenever frost warnings are issued for his locality he should carefully determine the temperature and dew-point frequently during the late afternoon and night. A good outfit consists of a metallic thermometer, so arranged as to automatically close an electric circuit and ring an alarm whenever the temperature of the air reaches 32°. In addition to a reliable sling psychrometer there should be some small device for testing the motion of the gentle air currents in the orchard. Too much attention can not be given to this question of air motion. Many smudging devices have failed to be effective, because of a slow movement of the smoke away from the orchard.

It is well known that lowlands are visited with frost while hillsides and hilltops escape. Every fruit-grower should study the topography of his land, and plant accordingly. Windbreaks are, as a rule, considered detrimental. No hard and fast rule, however, can be laid down. By planting a windbreak in the proper place, defects in the topography may be overcome and air currents established where otherwise pools of quiet air would have formed. A windbreak dense enough and so situated as to interfere with any natural circulation and facilitating the formation of still areas or pools would, of course, prove injurious.

A large number of small fires, advantageously placed, will raise the temperature of the air several degrees. The Riverside Horticultural Club, testing the various methods which were in use in California, came to the conclusion that wire baskets suspended a few feet above the ground, and holding several pounds of coal or charcoal, made an efficient protector. This method was described by Mr. Edward Copley, of Riverside, Cal., in several articles published in the Riverside Press of April, 1896. The cost of the wire basket is about ten cents, and if forty baskets be used to the acre, the cost of fuel will hardly exceed $2.50. To this must be added the cost of labor during the night and succeeding day in refilling the baskets. This method meets with most favor in Southern California. The temperature can be raised certainly 3° or 4° with from twenty to forty of these baskets to the acre. It has been suggested that a number of small oil lamps be used with success for this purpose. Oil pots have been used and make a hotter fire, but the deposit of lampblack upon the fruit is objectionable. Some cheap modification of the ordinary plumber's furnace might possibly be devised, which, by means of a moderate blast, would produce a high temperature.

Damp straw, old wood, prunings, manure, etc., when burned briskly, furnish an effective smoke, and if the material while burning is doused with water, the result is a dense steamy smoke, which, while trying on human lungs, serves as a screen to prevent loss of heat by radiation and as a barrier between the chilled fruit and a sudden application of heat at the time of sunrise. Wet smudging has been tried in many ways, with varying results. There are many reports of failure, and, on the other hand some definite results showing the good accomplished by this method. Here, as in all other methods of protection, much will depend upon a careful study of the local conditions. Many a farmer smudges so that some neighbor gets the benefit of his work while his own fruit remains unprotected. All motion of the air should be noted carefully, and this is sometimes difficult where the smoke is very dense. In some orchards sacks of old straw soaked with oil are so distributed as to be available for quick lighting. Portable smudges have also been devised.

Of all methods proposed for the protection of fruit, excepting wire baskets, irrigation has the largest amount of evidence in its favor. It has been tried in many different places with different crops, and has generally given satisfaction. Where water is not very plentiful, and this is the case strangely enough in some fruit sections, the method may not always be practicable, but with this exception there are many decided advantages in the generous use of water. Injury from frost depends almost as much upon the condition of the tree as upon the severity of the weather. Critical periods in the life of the tree can be controlled to some degree by the use of water.

Some fruit-growers hold that heat is the one thing that is desired at times of frost, and that the best method is that which produces heat by the simplest and least expensive process. Water, owing to its high specific heat, forms an excellent agency for the temporary storage of heat energy. We have seen that in the wet smudge an attempt is made to utilize the latent heat of vaporization, and theoretically this has always seemed the most advantageous method. A modification of the wet smudge is steam piped through an orchard. It is claimed that the temperature was raised 3° whenever the steam was turned on. It is also said that the coal consumed would not be more than the amount used by the basket method. The estimated expense per acre would be about $75.

After frost, or rather just before a frost has ended, a spraying device can be used to advantage. Its chief function is to prevent a too rapid warming of the chilled fruit. It is said by horticulturists that even the light coating of ice formed in this way does not seriously damage the fruit. It is very likely that the latent heat of solidification set free by the change from water to ice may play a helpful part; but the chief effect is to prevent a too rapid thawing. In other words, both heat and water should be supplied to the chilled plant slowly, and according to the plant's ability to make good use of the same. At the A. J. Everest ranch at Riverside, Cal., a portion of the grove is protected by sprinklers at the top of fifty-foot masts.

All screening or covering devices are in effect modified hothouses, and there is no question but that a thorough protection can be accomplished. The expense is the one objection. Screens are made of light materials, namely, canvas, muslin, or light woodwork, and have been used with considerable success. At the A. J. Everest ranch an elaborate structure of lath screens is in use. There is no question as to the value of the protection, but the expense is considerable, averaging perhaps $400 to the acre. This lath covering may be considered as forming a well-ventilated hothouse.

INJURIOUS TEMPERATURES.—A list of injurious temperatures, taken from Professor Hammon's pamphlet upon "Frost," is also of interest, and I wish the members of this Convention would test the figures given in this table, so that we may determine, by actual test, their reliability.

Table of Temperatures at which the Following Plants are Liable to Receive Injury from Frost.

Compiled from information received from horticulturists, orchardists, and gardeners throughout the entire Pacific Coast.

The temperatures given are, as nearly as possible, those of the air in contact with the plant itself.

Plants or Fruits.	In Bud	In Blossom	In Setting Fruit	At Other Times	Plants or Fruits.	In Bud	In Blossom	In Setting Fruit	At Other Times
Almonds	28°	30°	30°	28°	Onions	------	------	------	29°
Apples	27	29	30	26	Oranges†	30°	31°	31°	‡26 §29
Apricots	30	31	32	30	Parsnips	------	------	------	27
Asparagus	29	29	29	26	Peaches	29	30	30	29
Bananas	31	31	32	31	Pears	28	29	29	28
Barley	------	29	------	------	Peas	29	30	30	25
Beans	------	31	------	------	Plums	30	31	31	29
Beets	------	------	------	25	Potatoes:				
Cabbage	------	------	------	15–27	Irish	30	30	30	31
Cantaloupes	32	32	------	30–31	Sweet	31	31	31	31
Cauliflower	------	------	------	20–27	Prunes	30	31	31	29
Celery	------	------	------	28	Radishes	------	------	------	52
Cucumbers	31	31	31	32	Shrubs, roses, or trees	26–30	28–32	------	30–26
Cymlings or Squash	31	31	31	30	Spinach	------	------	------	21
Flowers*	31	31	31	30	Strawberries	28	28	28	30
Grapes	31	31	30	28	Tangerines	31	31	31	28
Grape-fruit	30	31	31	28	Tomatoes	31	31	31	31
Lemons	30	31	31	28	Turnips	------	------	------	26
Lettuce	------	------	------	12–28	Watermelons	------	------	------	28–31
Mandarins	31	31	31	28	Wheat	------	31	31	------
Oats	31	------	------	------	Walnuts, English	30	31	31	28
Okra	------	------	------	31					
Olives	30	31	31	‡18 §24					

* Depends on variety. † Injured at 2° higher if continued four to six hours. ‡ Ripe. § Green.

In conclusion, organization is needed among fruit-growers in the matter of protecting their fruits at critical periods as much as in any other matter that affects them. The fruit-grower who will not smudge at a critical period when his neighbor is smudging, is, whether he knows it or not, getting certain benefits from his neighbor's work, while doing his best to handicap that neighbor and prevent the successful issue of that neighbor's efforts. I am glad to say that the citrus-fruit growers, and especially those of the Riverside district and members of the Horticultural Club, have always been to the front in this matter of frost-fighting, have organized frost districts, and I believe are ready this year to attempt to protect their oranges by concerted and well-directed action. I wish to strongly urge the deciduous-fruit growers to emulate the example of their brethren of the South.

A vote of thanks was tendered to Professor McAdie for his very interesting address.

Mr. Adams offered the following resolution, which was referred to the Committee on Resolutions, and reported favorably:

Resolved, That this Convention directs public attention to the importance of such a speedy and thorough revision of the water laws of the State as shall make titles to the use of water secure, and that we respectfully urge Congress to recognize the vigor and ability with which irrigation interests are now promoted, under great disadvantages, by the Department of Agriculture, by providing and equipping in that department a full Bureau of Irrigation, or Agricultural Engineering.

It was moved by Mr. Fitch that a committee of five be appointed for the purpose of organizing coöperative associations, and that the present Committee on Pacific Coast Markets should be retained for this purpose, with power to add to their number.

Motion carried.

The Convention then adjourned until 7:30 p. m.

EVENING SESSION—THIRD DAY.

Thursday, December 5, 1901.

Convention met, as per adjournment, at 7:30 p. m. President Cooper in the chair.

NOTES ON PLANTATIONS OF CAPRIFIG TREES.

By DR. GUSTAV EISEN, of San Francisco.

It is not necessary to dwell upon the importance of caprifying the true Smyrna figs. Experiences during the last two years have fully demonstrated the necessity, value, and practical feasibility of caprification. The nature and culture of caprifig trees are, however, less understood, and remarks upon these topics may be of more general interest. Such horticulturists as are interested in the process of caprification can do no better than consult the paper entitled "Smyrna-Fig Culture in California," by Dr. L. O. Howard, in the Yearbook of the U. S. Department of Agriculture for 1901.

In order to have a sufficient supply of Blastophaga wasps for caprification, it becomes necessary to cultivate the caprifig trees in which the wasps breed. In the Asiatic, or rather Mediterranean, countries, the caprifig trees do not necessarily need to be cultivated, as they grow wild almost everywhere, and the figs containing the wasps may be had by simply plucking the wild figs at the proper time. But experience has taught the Mediterranean fig-growers that not all caprifig trees are alike, and that it is not always safe to rely upon the wild figs producing sufficient crops of the proper quality at the time the figs are required for the caprification of the Smyrna figs.

OFFICE OF THE CAPRIFIG.—The question now arises as to the qualities most highly prized in a caprifig tree, and their practical importance to the horticulturist.

It may not be entirely superfluous to point out first the practical relationship of the caprifig and the wasps used in the process of caprification. When the Smyrna figs have attained a certain size their female flowers have become receptive; that is, they require to be pollinated by the pollen from the male flowers, in order that they may set fruit and mature seeds. As the fig is closed, and no pollen can enter through the aid of the wind, as is sometimes the case in other kinds of flowers, it must be brought there by the means of insects. The aid of insects in bringing pollen from one flower to another is a most common thing in nature, and it is safe to say that the majority of flowers are pollinated in that way. It will thus be seen that in order to caprificate the Smyrna figs, we require, not only caprifig trees and wasps, but it is also necessary that the wasps should be covered with the fig pollen when they emerge from one fig in order to enter another. This makes the question more complicated yet, and it is this question of pollen which distinguishes the caprification of the Smyrna figs from the caprification of the wild figs or caprifigs. The wild figs or caprifigs can be caprificated and will set fruit without any pollen being present, but the Smyrna figs would all fall off, and dry without maturing, if pollen was not present in sufficient quantity to pollinate a large number of fig flowers.

WHY DIFFERENT CAPRIFIGS ARE NECESSARY.—The successful cultivator must carefully consider the qualities of his caprifigs, as upon their nature and characteristics depend the profits of years of labor, just as much as upon the quality of the Smyrna figs intended for fruit. The main point that is to be considered is the necessity of procuring an abundant supply of Blastophaga wasps covered with pollen at the time required. If either the pollen fails or the wasps appear too late or too early, a failure will be the result. To avoid these the cultivator must prepare a plantation of the proper kinds of caprifig trees. The first caprifig tree which we know of with certainty in this State was imported into California by the Bulletin Company of San Francisco. This tree was planted at Niles on the Shinn place, and it is safe to say that many trees resulting from cuttings of this tree have been scattered over this State and are now growing in full vigor without having attracted any special attention. Unfortunately this caprifig tree was not of a variety which could harbor the fig wasps during any longer period than a few months. It possesses only one crop of figs a year—the crop known as the profichi or spring crop. The other two crops are missing. This profichi crop sets late in the fall of the year, and becomes receptive to the wasps next spring, some time in March or April, and matures during June or July. Now it is known that the Blastophaga wasps require young caprifigs as soon as they hatch out, in order to have a place wherein to lay their eggs. If, as in the caprifig just referred to, there is no such young figs present, it is evident that the wasps must soon perish before they find any flowers suitable for their eggs. It will thus be seen that there must be different kinds of caprifigs, and that some figs are more suitable for harboring the wasps than others. As a general rule, it may be said that the caprifig tree possesses three more or less distinct crops a year, and that each crop overlaps the other, either on the same tree or on different trees. Each crop of caprifigs hatches a distinct crop of fig wasps, and there is thus a constant succession of figs and wasps, either on the same tree or on different trees.

The Different Crops of Caprifigs.—The figs which are used for the caprification are, as every one knows, the profichi crop. It will be seen that the crops of the caprifig are not all of the same importance to the grower. Of the profichi figs we require many thousands, or many hundreds of thousands, as the case may be; while of the other crops we have need of only a few figs. The different uses to which the different crops of the caprifig tree are put, may be stated in a few words. All the three crops of the caprifig are used for caprificating the caprifig itself, while only the profichi are used in caprificating the Smyrna figs. As long as we possess a caprifig tree which bears three distinct crops each year without fail, we need have no anxiety about caprifying the caprifig tree itself. But if our caprifig tree is such that it bears only one or two of the necessary three crops, then it becomes necessary to interfere and procure the missing caprifig crop from some other place. The three crops of the caprifig tree are designated by different names. The fig crop which appears as small buttons in the summer and attains its full size during the winter is known as the mamme figs. These figs harbor the wasps during the winter—in other words the wasps hibernate in the mamme. The figs which set in the fall as small buttons and which mature in the spring are known as the profichi figs. The figs which set in the spring and which mature during the same summer are known as the mammoni figs. All the Italian investigators have mentioned that there are three distinct kinds of caprifig trees. Some bear only one crop of figs a year. These are called by them "uniferi." Others bear two crops a year, called "biferi"; while those which bear all the three crops are known as "triferi." Now we know that the Bulletin fig mentioned above bears only one crop, and thus belongs to the type known as uniferi.

The question arises why should we not discard all varieties which bear only one crop and plant only those which bear the regular three crops. To answer this question is not as easy as it may appear. It will suffice to state here that experiences have shown that it is desirable to have caprifigs of the three kinds. Figs which bear only one crop a year are, as a rule, much stronger and bear their special crop with more vigor and abundance than such trees as divide their vigor and fertility between the three crops. As we require a large number of profichi figs it seems but natural that we should preferably plant caprifig trees which bear this crop in abundance. If such is our choice, then we may have to look to other trees for mamme and mammoni figs. This is exactly what is done in Smyrna. There the fig-growers plant principally caprifigs which bear a large profichi crop, and depend upon their wild fig trees to furnish mamme and mammoni figs.

Local Adaptations.—Another point to consider in the choice of caprifigs is that these fig trees are especially adapted to certain localities, in which they thrive, while in others they prove a failure. In California caprifigs have not yet been tried enough to know which varieties are suited to any certain locality, and which are not suited to that same locality. Because a certain caprifig does well, we will say in Sacramento, it is not by any means certain that it will do well in San José. The planter who starts his caprifig orchard with the expectation that he requires only a single caprifig variety may be much disappointed when the time comes for caprificating his trees. He may find that the variety he has planted possesses too few profichi, though he knew that this same variety possessed that most desirable quality in some other place. The grower who intends to plant Smyrna figs would, therefore, do well in supplying himself with a variety of caprifig trees of as distinct types as he can find.

It must also be remembered that some caprifig kinds are more susceptible to frost than other kinds. Heavy frosts will kill the winter mamme figs and destroy the wasps. In order to replenish the young profichi figs with wasps, it will then be necessary to import new mamme figs from some frost-free place and caprificate the profichi figs anew. This leads to the desirability to have caprifigs planted in various places, both in the foothills and on the plains. Places especially suited to caprifigs are those which are sheltered. Mr. A. E. Schwarz was the first to demonstrate that the caprifig requires a sheltered position in order to properly shelter its wasps. In exposed localities the wasps are apt to be blown away before they have a chance to enter any of the young figs. Accordingly, the best places for caprifig trees are sheltered nooks, among hills or in otherwise protected places. Or if such places are not to be had, then it is best to plant the caprifigs close together and shelter them from the prevailing winds by windbreaks of evergreen trees. The caprifig trees should be planted in hedgerows, say fifteen to twenty feet between the rows, while in the rows they should stand much closer. After the trees are once planted they should never be pruned, as this would let in air and sun. The wasp requires shade and shelter in order to thrive. If this is furnished, then it is safe to say that the little insect will take care of itself.

A Collection of Caprifigs.—In California we have now growing not less than eighteen different varieties of caprifigs, all of which have been gathered together in one collection on the place of Mr. John Rock at Niles. This collection includes all the figs imported by different persons from abroad, as well as some varieties originated in California. These varieties have been carefully described in a paper which is now being printed by the United States Department of Agriculture. Many of these varieties are of exceptional promise, and will no doubt be widely distributed.

Summary.—It may facilitate the understanding of the culture of the caprifigs if we here recapitulate the main points which I have endeavored to bring out in the foregoing.

1. It is highly desirable and in many cases necessary to plant several varieties of caprifigs.

2. It is to advantage to have caprifig plantations in at least two different places, in order to insure as much as possible against the frost, and for the purpose of having ripe caprifigs when they are wanted. With an assortment of caprifigs, and with several plantations, one of which should be in a locality sheltered from severe frosts, we need have no fear of the dying out of the wasps.

3. Caprifigs should be planted close together in odd nooks and corners near, or in, the orchard; or if no suitable locality is found there, as near the fig orchard as convenient.

4. Caprifigs require no pruning. They should be headed low, or allowed to divide from the very ground, and suckers should be encouraged, in order that there may be plenty of shade for the wasps.

5. The practice of grafting the caprifig on the limbs of the Smyrna fig is entirely unsuitable, as it is doubtful if the wasps would live in a few exposed branches. It is also doubtful if the profichi from the caprifigs would ripen at the proper time and in sufficient number to insure caprification of all the Smyrna figs which we wish to have caprificated.

6. Caprifigs should preferably be on their own roots, and not grafted as standards on other fig stock.

THE FIG.

ADDRESS BY GEORGE C. ROEDING, OF FRESNO.

I left California last May for the purpose of investigating the question of the Smyrna fig as it grew in Smyrna. I left early in the season in order to be in Smyrna during the season of caprification. We had discovered many things about this subject theoretically, but there were many practical points that we did not understand. I left Berlin on the 2d of June and arrived in Constantinople on the 4th and was in Smyrna on the 11th. I went on this trip as the special agent of the United States Government, and immediately called upon the American consul to see whether he could give me any information in regard to the caprifigs. My principal object was to see how caprification was carried on. He said I had arrived too late, and naturally I was very much worried about it. As I could not go out into the interior right away, I took an interpreter from the consulate's office and got into a cab and traveled around the suburbs of Smyrna, desiring to find a few caprifigs, in the hope, possibly, of learning that I had not arrived too late. After traveling awhile, I was successful in finding a caprifig. The insects were just about to emerge, and I realized that I had arrived just in the nick of time. The following day I went to Aidin, and told the consul my object in making this trip. I knew I was in a rather dangerous position, and that if they found out what I wanted every obstacle would be placed in my path. I represented to the interpreter and all other people that I was a special agent of the United States Department of Agriculture from New York, and whenever I had an opportunity I discussed with those people the subject of caprification. I stated to them that I had heard that there was an insect required for the production of the Smyrna fig, and that I thought it was ridiculous. All of these men told me that I could believe what I pleased, but they said, "We know that if we don't have this insect we don't have Smyrna figs."

After spending a few days there I went out to several fig orchards, in which caprification was just going on. I asked the gentlemen a great many questions about caprification and the methods of carrying it on, and I was surprised to learn the intense ignorance displayed on the subject. They knew nothing of the subject outside of the fact that without the insect they had no figs. They did not know how to account for the insect, or anything else about it. I asked them what became of the insect when the fig disappeared, and they said the insect disappears. I asked them how they got it back again, and they said, "We don't know; it comes out of the woods." As I say, upon my arrival at these orchards caprification was going on, and I began to examine the

Smyrna figs for the purpose of determining one point that was of great importance, and that was to ascertain the receptive stage of the Smyrna fig. I found that when the figs were about the size of a marble and the flowers of a waxy white appearance, and the Smyrna fig of a shiny green appearance outside, was the time it was in the receptive stage. I also found that instead of one insect going into a fig, in almost every instance there were from four to five insects in each fig. Another point about which I was in doubt was to determine whether caprification was only practiced once or a number of times, and how many caprified figs it required to caprify a Smyrna fig tree. I found it was carried on from two to three times in a season, when the caprifice crop was bearing. On an average, in trees forty years old, not more than from twelve to sixteen caprified figs were hung in the trees at any one time.

Returning to Aidin, after making these investigations, the following day, unfortunately for me an article which had appeared in the Saturday Evening Post in the United States was copied into the Turkish and Greek papers, and the gentleman at whose house I was stopping learned through these papers who I was. Of course I had gone there really under a misrepresentation, telling I was from New York and making believe I knew nothing about the subject. Through my interpreter I learned that this gentleman was very much worried, fearing that through the information and assistance he had given me he might get into trouble with his Government. After a few days he concluded to give me all the information necessary, but after that time I traveled under an assumed name.

The extent of this fig district will probably be of interest to you. The orchards commence about 48 miles from Smyrna at a place called Iencaliz, and extend up as far as Densley. The extent of the fig district is about 106 miles, and the fruit is grown entirely in the Meander Valley. The district is about three fourths of a mile wide, along the lower foothills, and you only find the figs growing around these hills and none at all in the valley itself.

The methods of cultivation are very crude indeed, the people simply doing as their ancestors did. The trees as a rule are thirty to forty years old. Wherever a tree has died they re-plant with young trees, and their trees are never pruned. After the freeze of 1898 nothing was done with the trees, and you can see the dead wood sticking out through them all over the country. Another thing, instead of training the trees so as to prevent sunburn, they are allowed to branch from six to seven feet from the ground, and instead of one stem, they have seven or eight stems. I asked a gentleman why this was, and he said, "That is the way my father did it, and that is why I do it."

Another very interesting thing is to see the manner in which caprified figs are sold on the market. The caprified figs are, as a rule, found growing throughout the towns, and they are picked by the peasants and carried to the markets early in the morning, and by seven o'clock the buyers come and will pass from one basket to another and determine which they want, and for which they will pay the highest price. The price depends entirely upon the number of insects the fig shows—the most insects bringing the highest price.

I started to look up the varieties of the caprified figs, but I gave it up. There are almost as many varieties as there are trees. To show you how these caprified figs are valued and what they think of caprification in Smyrna, I learned that in 1898 they had a terrible frost and all the trees were practically frozen. In order to get some for the Smyrna figs, they sent to the island of Keos and paid as high as $80 to $100 a ton for them, when the ordinary price is about 2 cents a pound. Another thing that puzzled me is that there is no irrigation practiced there. The average rainfall is from 20 to 25 inches, and the only irrigation is for the vegetable gardens.

A MEMBER. What time of the year is the rainy season?

MR. ROEDING. From October until May. I left Smyrna in the latter part of June and returned in August for the purpose of investigating the methods of drying and of packing. I found that the method of drying was very crude indeed; it was very simple, with very little expense attached to it. The figs were allowed to drop, and were also shaken and knocked off the trees. The picking takes place, as a rule, early in the morning, and after they have got the figs off the ground, they shake the trees and pick them off, and knock off those that are sufficiently dried, and then the fruit is taken to a kind of a shanty and spread on a mat. No attention is paid as to whether the figs touch each other or not, or whether they are upside-down or any other way. That makes no difference at all to them. The time of drying is from two to three days. The only figs that are turned are the large figs. They take their hands and shovel them up in almost any way to get them turned over. They are then put in piles until they are ready to be taken to the market, where they are placed in sacks and taken to the nearest railroad station. Trains leave these stations daily. There is no class of fruit handled with greater rapidity than the fig. The day I went from Aidin to Smyrna during the fig season over a dozen tons of figs came into Smyrna that night. To give you an idea of the magnitude of the business, I will say that this season the product will be from 25,000 to 30,000 tons, and that there will be about 30,000 people employed there during the fig season.

DR. SHERMAN. How do they pack them?

MR. ROEDING. The first part of the packing comes in the sorting of the figs, which is done by women. The figs are dumped into big piles, then sorted into round baskets, and then carried by boys to the fig-packers. The packing of the figs is really done by men entirely; all that the women do is the sorting. In sorting them the bad figs are thrown on one side and the good figs put into the baskets.

DR. SHERMAN. Do they grade them according to size?

MR. ROEDING. Yes, sir; according to size. The method of packing the figs is practically the same as we adopt, except that the finest figs are packed in what we call the "Lacoon" method. All the finest figs are packed in this manner, and they bring the highest price. I bought some of them and was given a wholesale price on them. I paid in Smyrna 19 cents a pound for them. In New York I found the same fig in one of the wholesale houses, and upon inquiry from the gentleman in charge I found that he had paid 19 cents a pound for them in Smyrna, but he said the price was too high for this country.

A MEMBER. Do they dip them at all?

MR. ROEDING. No, sir; no processing of any kind. There is no sulphuring or dipping at all. All their figs are filled with worms. I asked one man why they didn't kill the worms, and he said that it took too much time. When a ship leaves there with figs it simply crawls with worms. Of course they could destroy the germs of these worms if they would steam the figs or dip them in boiling water.

A MEMBER. Is there any bleaching or sulphuring of them?

MR. ROEDING. No, sir. Some figs are put up in boxes and labeled "washed figs," but that statement is not true. The fact is, none of them are washed or processed at all.

A MEMBER. How do they get the dirt out of them?

MR. ROEDING. In handling them; and in order to keep the figs from adhering to their fingers, they are handled with moistened fingers, kept moist by dipping them in a brine. Where they dip this salt water up from the sea and take it to the packing-house, all the sewers empty. I will say that a number of the packing-houses are cleaner than they have been represented to be by some. Some of them are dirty, but the better class of packing-houses are in many instances very nice, and they are kept as clean as they can be in handling that class of goods.

A MEMBER. Do figs sour there?

MR. ROEDING. Yes, some; but not so much as our Adriatics. They all sour there if they don't happen to have the north wind, which is a dry wind. If they have a west wind, they sour and spoil as much as ours do. They have smut there, too. I asked one man what caused it, and he said it was because the packers smoked in the buildings. That is not so, however.

A MEMBER. Can they raise figs cheaper in Smyrna than here?

MR. ROEDING. Yes, with their cheap labor they probably can. But the good Smyrna figs there bring on the average 2½ to 3 cents a pound, and we can make a very good profit on figs at that figure here in California.

A MEMBER. What does the packer pay the producer?

MR. ROEDING. From 2½ to 3 cents. Those figs that will not do for packing are used in making coffee and also in making brandy.

A vote of thanks was extended to Mr. Roeding for the information given on the fig industry in Smyrna.

THE ORANGE IN SOUTHERN CALIFORNIA.

BY J. W. JEFFREY, OF AZUSA.

In the short time I might properly have in which to present this great subject to the Fruit-Growers' Convention, I can not hope to set forth a satisfactory treatise upon the orange in Southern California. Nor would a synopsis of what has been written upon this important feature of the horticultural achievements of the State be of value, as almost every one has access to the bulletins and pamphlets that have been printed concerning this industry. However, had I the ability to present the subject in the form of a log book of the experiences of the last few years, many items would appear not even hinted at in the publications at hand. Until some one shall have written a complete text-book upon the orange in California, I am pleased to see this subject continued upon the programmes of the State Conventions, though I admit that in attempting to honor my part of this one I do not know what you expect or why your committee has selected me to present it.

Few people of the north realize the rapidity with which orange culture has advanced in the region south of the Tehachapi, or its effect upon the industrial progress of that section. In spite of our boasted climate and all agricultural and kindred interests, the orange industry is responsible in the greatest measure for the stability of our institutions, for the large increase in population, and for the rapidity of progress that is apparent in every line of development. With the exception of the lemon, no other horticultural product is increasing, and it is difficult to realize the extent to which the orange has superseded all other fruits. In 1889 I was delegated by a local committee to make up an exhibit for a citrus fair to represent my home locality, known as "The Azusa Valley." After two days of hard work I had secured six boxes of Navel oranges thought to be of exhibition quality. This represented all the fancy stock in the valley, and it was proudly exhibited as the first fruit offerings of an ambitious but only promising section. In 1901, just a dozen years later, the territory canvassed with such meager results shipped 2,200 carloads of oranges and 500 carloads of other citrus fruits, only 20,000 boxes shy of a million, and weighing 68,000,000 pounds. This record of increase has been paralleled at Pomona, Ontario, Redlands, and other citrus centers, not to include the remarkable development at Riverside, which is yet producing one hundred per cent more fruit than any other section, bringing the total output for 1901 up to 21,175 carloads of oranges alone. The world has never before witnessed the concentration of so much capital, energy, and enterprise upon an equal area of agricultural lands in the space of one decade as that lavished with so much success upon the citrus territory of Southern California.

Ten years ago the orange industry was fairly in its experimental stage; ten years ago began the great increase in population that gave to Los Angeles City front rank in percentage of gain of all the important cities of this country, and to every citrus-growing center a population far outstripping Los Angeles in percentage of gain, though not appearing in the returns from lack of data with which to make comparisons. It is more than coincident that these developments of soil and population should mark time together. The former could not proceed without the latter, in the orange business, for it required increased labor to maintain the intense cultivation and harvest the product that produced this record. The orange should be recognized, then, as the cardinal factor in the development of Southern California from the census-enumerator's standpoint.

We are told that Belgian *fruit* culture is more intensive than that of any other portion of the world. Indeed, I know of nothing so intensive in this country, except the cultivation of the Belgian hare in Southern California two years ago, in which we had a monopoly, until the demand became so brisk in the north that our profitable hutches were depleted at a cost of from $5 to $150 per hare. Nothing has proven more lucrative than the intensive cultivation of the hare or the orange, except that of resistant grapevines at 75 cents a cutting, and you may look upon it as a law of compensation that what the north lost on hares will soon be regained on vines, and we play even in the honors of intensely cultivating each other in the promotion of these two great industries. But this digression prevented me from setting forth the fact that were it not for the use of modern methods of irrigation, economy in the use of machinery in cultivation, and labor-saving appliances in preparing the crops for marketing, the orange-growing centers would present a duplicate of the Netherlands in the rural population necessary to produce and care for the present fruit tonnage. I have known one acre of orange trees to produce 70,000 pounds of merchantable fruit at one picking. No cultivated crop that I have seen is equal to that of a thoroughly cared-for orchard of Washington Navel oranges. Twenty thousand pounds of corn and potatoes, grown at the same time upon an acre of drained peat lands at El Monte, is far below this mark. Without presenting too many facts that might require verification after adjournment, we all will agree that the Navel orange tree is the most magnificent feeder and producer, except the pomelo, of any orchard tree. Consequently it requires a proportional amount of labor to supply the food, keep the tree in health, and care for the product.

My home is in the midst of an irrigation district of nearly 4,000 acres of bearing orange trees. On the south, and breaking away from it like a step down from a great green wall, is a tract of 4,000 acres of fine wheat land farmed by one rancher. By the use of a great, modern traction engine this farmer expects to cultivate, seed, harvest, and thresh the cereal crop of this tract, requiring the labor of four men annually to do the work. A ten-acre orange grove requires the constant labor of one man to irrigate, cultivate, harvest, and pack the crop that is produced every year. Thus, the complement of the 4,000-acre tract of orange trees is 400 men, as against 4 for the farm tract of equal area. As the southern orange-grower has taken the contract to sell his own fruit in coöperation with his associates, and makes big money by attending to this business, as well as that of growing the fruit, it is safe to say that 600 helpers are required in all the departments of the business to care for the 4,000 acres of orange groves in question. From this typical example of industrial California, and its contrast with plain farming, one may understand the principal cause of the progress Southern California has made in population and wealth during the last decade.

Without giving up my attempt to sketch the latest experiences in orange culture, it may be stated that the south has practically settled upon two varieties as the standards for general cultivation. The first in importance is the Washington Navel. Public sentiment, both from the growers' and from the consumers' standpoint, has always given this orange the preference. The tendency of this variety to sport back to worthlessness, and the consequent mistakes of the early propagators in their selection of stock from which to grow trees, are the only valid arguments that have ever been used against the general adoption of this orange. Later years have shown that a typical tree once established will always remain so, and that has thrown the burden of purity of stock upon the nurserymen. Planters understand this so thoroughly that they now spend more time in the selection of their nurserymen than formerly, and the younger orchards are coming to maturity with a minimum of "sports" and in many cases a full complement of typical trees. Tens of thousands of dollars have been spent in budding-over off-quality Washington Navel trees, but the progress of to-day recognizes very little necessity of starting an orchard subject to this fault. Perhaps these weaknesses in this variety have caused its utter failure in

Florida, and this may be another case of compensation. At least it is not a cause of anxiety upon the part of California growers.

The other standard orange is the Valencia Late, a somewhat seeded variety, and hence not subject to the inconstancy of the Navel, and rarely if ever missing in typical quality through the faults of the parent tree. This orange, in a few localities, vies with the Navel for supremacy of acreage, but generally is of small importance in the crop totals. It is not prepossessing in color, it is uniform in quality, size, and productiveness, and could it be shipped skinless would sell better upon its color, texture, and solidity. There are two or three hybrids of the Washington Navel and the Valencia Late which might have been more popular had they not been queered by the explanations of their origin.

As this is in the nature of current comment upon the orange in Southern California, I shall not mention the other varieties, except to state that most of them have gradually lost consideration at the hands of the practical grower. Some progress has been made in the cultivation of the Tangerine, and in a few cases it has been very profitable. The other varieties of the Mandarin type are yet in their experimental stage and can not be ranked among the profitable kinds. The pomelo, the largest and most prolific of all the oranges, is halting at present, with good prospects of becoming a perpetuity in the ordinary run of the business.

The stock now being planted is almost universally first-class. The mistakes made in planting scrub orange trees were in evidence years ago, and the lesson has been so impressed upon the orchardists that the nurserymen seldom advertise or attempt to sell poor trees.

There is nothing new in the practice of preparing the ground for trees. Experience has shown that the land must be graded with special reference to its irrigation. There are many misfit orchards among the oldest plantations in this respect, entailing great loss in the congestion of fertilizers, inequalities in irrigation, and impossible irrigation in some cases. The intelligent planter no longer prepares his land improperly or by fixed rule, but proportions his grade as far as possible to the character of his soil and the methods of irrigation he wishes to use. I need not describe the different plans of orchard formation. The square, the five square, and the triangular each has its advocates; but since the orange has been found such a ravenous feeder that its roots soon ramify its feeding-ground entire, we hear little of the arrangement of the trees, but much of their planting distances.

Aside from the fact that the square formation has the advantage of all others in economy of cultivation, especially in alluvial soils where the ground near the trees does not need cultivation, it has been found advantageous from the fumigator's standpoint. There is nothing more bothersome to the tent men upon a dark night than to keep tab upon every tree in a five-square or triangular arrangement. As to subsoiling, that is not practiced extensively of wet years, and may be superseded altogether by the orchard plow. At any rate, the square method allows sufficient room for the subsoiler, even far more than one furrow to the row, which gives the same results as is claimed from the other systems of planting. Plant in squares 20 feet across if your land is not strong, 22 by 24 feet where the soil is heavy and the tree growth abundant. Many orchardists who planted 18 by 20 feet are reaping the benefit of their folly by hauling their fruit out upon narrow sleds, and Southern California is not an ideal locality for sledding. It is impossible to fumigate many of the old orchards because of the interlocking of the branches, and the error of close planting will hereafter be carefully avoided for this and other reasons too well known to require notice. On the experience that the greater feeding area a tree is given, the less its liability to dangerous fluctuations in vitality and consequent effects upon the quality of the fruit, the average planter would advise 22 by 24 feet as the proper distance to plant, both from the economics of orchard work and from the quantity of merchantable fruit produced.

There is something new in cultivation. Last year Southern California grew the largest and the least resistant crop of oranges ever produced. Among the other reasons given for this, is shallow cultivation, and, following, shallow irrigation. In the wake of these extremely dry seasons came a persistent hardpan, even in alluvial soils. This produced a tendency to strangulation of the deeper roots and a consequent activity of the surface feeders. These surface roots were fed the fertilizers the whole root area should have had, and, being constantly stimulated by irrigation, constantly stirred to hardpan by the teeth of the cultivator, and scalded by the hot sun, the functions of the entire tree were in a state of unrest and partial impotency. It is not impossible that this constant arresting and forcing of the development of the fruit caused the sweetening of the pulp observed in October, the lack of oil formation in the skin cells, and the non-union of the rind and pulp—all so noticeable in last season's crop. At any rate, as soon as the 20-inch rainfall of last winter penetrated the hardpan the trees resumed their normal functions with their old-time vigor, and now it is a laborious process to separate the rind from even a ripe orange, and impossible to find an abnormal crop in other respects. These points may be thought somewhat theoretical, but they have brought conviction to a large number of practical men, who will hereafter, in the event of a dry, hot season, use the orchard plow to train the tree roots down to a safer feeding surface by preventing the formation of a dust pan. In spite of the adversities of last season, I knew several cases of deep plowing which held the fruit intact until May, while many in the same locality were compelled to harvest their crops in early winter where shallow cultivation had prevailed. If the experiences of the past three years have demonstrated that dry-year crops may be improved by superior cultivation, a repetition of the troubles that befell the orange-grower last season may be avoided in the future.

In the pruning of orange trees there is no new item to present. Elaborate articles have been written on this point, but the practical orchardist does little or no pruning. To look after the water sprouts that may distort his trees, and to trim out the branches that die of inanition and thus give the tree an inside bearing surface, are about the limits of orange-tree pruning as practiced by the best growers. The orange tree will produce fancy fruit grown so near the earth that it may ripen in the sand, and indeed the best fruit is usually found upon the lower branches.

The question of adaptability of soil is no longer an open one. It has been settled so thoroughly by experiences that the new investor can avoid mistakes by a tour of investigation. Generally, lands which bear light, regular crops produce a somewhat superior orange, while the heavier lands produce slightly inferior fruit, but heavier crops. Modern methods of fertilizing have modified these characteristics until it may be broadly stated that there is only an immaterial difference in the fruit grown throughout the true citrus belt. A problem in regard to fertilization presents itself this season for the first time. The facts are that hundreds of groves where hardpanning had occurred for two or three years carried the annual or semi-annual applications of fertilizers to the beginning of this year with but partial assimilation. The light rainfall, the sparse irrigation, and other deficiencies caused by three consecutive dry years, together with the light cultivation, must have prevented the utilization of the fertilizers. This has brought a strange experience—the finest condition of trees ever seen, with the lightest crop ever grown from an equal foliage surface. The conclusion is that the trees last winter were supplied with a superabundance of wood-growing, but not sufficient fruit-producing, elements. There is a field for investigation here that the scientific authorities should exploit.

The question of insect disinfection is too large to cover in a paper of this character. In a majority of the citrus-growing sections unclean fruit bears its own penalty in washing charges, in falling to lower grades, and in the disrepute it brings to the orchardist. Fumigation is more universal this fall than at any other time. It has been reduced to a science, and while the practice is not always successful, poor work is no longer tolerated without a penalty upon the fumigator. There is little complaint of impure cyanide, but much of its improper application. Daylight fumigation, or more properly warm weather fumigation, is under ban, but many otherwise practical growers have not discovered it. Two or three of the leading citrus counties do this work at the treasury's expense, afterwards collecting from the lands treated. Los Angeles County still requires the orchardists to do their own fumigation. No new scale pests have developed since your last reports were out, nor is there evidence that parasites have taken the contract to disinfect the orchards of Southern California.

Upon the question of marketing you have heard a greater voice than mine, one that has been heard all along this coast and its influence felt. It is not boasting to say that Southern California has set the pace for coöperative effort among all other farming communities. Great as the actual achievements in this line have been, greater is the feeling of permanent security that has been engendered by the success of the Citrus Fruit Exchange. Were it not for the work of this coöperative institution, there would be no breadth nor vitality in my subject to-night. The association has given to the agricultural world its greatest example of the elimination of the unnecessary elements of a great industry, without the formation of a trust. It has increased the profits of the producer without taxing the consumer to do it. The manipulator, speculator, and even honest but depleting fruit merchants have been apportioned to thirty or forty per cent of the orange crop. They hold on to that through a strenuous endeavor that would appall even our great President. The idea of charging producers just what it costs to sell their fruits has unified the policy of 4,000 orange-growers, and made the Southern California Fruit Exchange the greatest fruit merchant the world has ever seen, giving that organization the record of handling millions of dollars every year, with losses from collections and disbursements so small that they do not amount to the value of 15 carloads in an aggregate sale of 25,800 made since the Exchange assumed control of its own fruit from the orchard to the market end of the line. The orange in Northern California is feeling the impulse of this great movement, and may soon be listed with the Exchange, for it is said that where even a few are assembled together the Lord will be with them just the same.

THE ORANGE IN NORTHERN CALIFORNIA.

BY D. H. MURRAY, OF OROVILLE,
Superintendent of Oroville Citrus Association.

The culture of citrus fruits, especially the orange, in the northern parts of California, particularly so in the foothill regions of Placer, Yuba, Sutter, Glenn, Tehama, and more especially Butte County, is rapidly assuming a place of importance.

Fifteen years ago last September, on my departure from Riverside, in Southern California, to assume the position I now hold, I was told by many that the people north, in Butte County, thought they could raise oranges, but that they would soon find their mistake and give it up as a bad job.

It did not take long to discover that oranges were growing here, and now it is an acknowledged fact; and a desire for a practical knowledge of their propagation and culture has so steadily increased in the above mentioned counties, that you can now find large orange groves of all ages, from one to fifteen years, and they certainly rank with the best groves in the State. These groves are not only growing, showing a dark, rich green color, but they are yielding an abundance of fruit, which gives the happy owner, in return for his labor, a well-filled pocket.

Butte County can boast of having at the present time five thousand acres of the golden fruit, and turned out last year, as I have been told, in the neighborhood of five hundred carloads. This year the county expects to put these figures away in the shade, as the crop is estimated to be much heavier this year than it was last. The bulk of the crop will be gathered from the magnificent groves of Palermo and Thermalito, together with outlying districts, and from Oroville and vicinity.

In regard to the other counties, I have not been able to obtain the number of trees planted, or the output of fruit for the last year. Still, I have been informed that the crop is much heavier this year than it was last season. These counties will certainly do their share in turning out a larger percentage of fruit this year than last. We will not only have a larger quantity, but the fruit will be of a far superior quality to any that has been turned out before.

Tehama and Glenn counties are forging to the front. The well-known Maywood Colony, in Tehama County, has planted in the last two years in the neighborhood of twenty thousand citrus trees, which, I have been informed by the owners, are doing well.

The question is often asked by strangers on arriving at some abandoned grove, "What is the cause of the trees all dying?" I may say that in this county, as well as in the above mentioned counties, hundreds, yes, even thousands, of dollars have been spent on some such groves, and these to-day are almost out of existence. The reason in some cases is neglect. Many have been informed that all they have to do is to get the ground, plant the trees, and at the end of two years they would have paying returns. They find out about that time that it takes considerable cash to take care of an orange grove as it ought to be cared for, and the consequence is that they try to cut down expenses by letting the cultivation go. In consequence, the trees all turn yellow and eventually die. The following year the grove looks so bad that the owner in many cases abandons the place altogether, and swears the orange business is a fraud.

I would always advise a person, with the view of having a model grove, to test and examine the land thoroughly. You may be told it is a beautiful looking tract, but remember it may be only skin deep, and below the surface you will find hardpan, cemented gravel, pipeclay, or some such subsoils which are undesirable and have caused many an orchardist disappointment and loss. In fact, so much so that I have known them to abandon the place altogether.

Everything depends upon the character and situation of the land to be planted, and according to these you must select and arrange your grove.

The orange delights in a warm, deep, fertile, and well-drained soil, and under these conditions will give to growers a bounteous crop. A cold and damp soil breeds disease, and death is sure to follow. Always select a position for an orange grove in a rich, deep, porous soil, where the trees will grow strong and vigorous. Better never plant a tree than put it in a heavy, low ground, or where water can be reached within three or four feet of the surface. The orange must not at any time stand in water, which in a very short time will cause the roots to die, and your tree will soon be beyond recovery.

The orange is sometimes root-killed by winter rains, although as a rule it is well on in the spring when the trees show the damage by turning yellow and the limbs begin to die. Drainage, as I will hereafter state, will overcome the trouble by lowering the water table and keeping the roots dry.

Throughout the northern counties the soil is of a red, gravelly loam, particularly so in the foothill lands, and is charged heavily with oxide of iron, which gives our oranges a much richer color than that of the orange in many other parts of the State.

We are more inland and have a much higher temperature during the summer, which certainly ripens our fruit five or six weeks earlier than the orange matures in the South.

The soil on the river bottoms is sandy on top and adobe below in many localities, which has a tendency to make the fruit coarse and thick-skinned, as well as much later in maturing than is usual on the higher ground.

A few words concerning drainage will not be out of place, as drainage is of the utmost importance: It increases the fertility of the soil, and promotes the health and vitality of the tree. In fact, this can not be too strongly impressed upon the minds of those who desire to make a success of orange culture. I have put in a great many drains in the past fifteen years, and it is really remarkable the improvement they have made in the trees. Not only that, but you can work your ground easier and during a longer period, as the soil is usually loose and mellow. It is too commonly regarded as sufficient to sink the drains merely out of the way of the plow, or, at most, out of the reach of the subsoil implements. But there are reasons founded upon ascertained facts why drainage systems should be deeper laid.

The oranges to be grown in the northern counties may well be headed with the Washington Navel, which may be styled king of all varieties, and on account of its earliness it is certainly the leading variety for us to grow. The Jaffa is an early variety, and is a great favorite with many. Another variety which has taken a leading position among the growers is the Dancy Tangerine and Satsuma or Oonshiu, which are both early and very fruitful. There are many other varieties grown which really ought not to be encouraged as profitable trees in this section, on account of their lateness.

A few words in regard to pruning, and then I am done. If carefully watched in their growth the trees will require little pruning. Remove all crossed branches, to prevent chafing, which might terminate in the dreaded gum disease. Pruning is certainly overdone in a great many cases, especially by those who go about styling themselves "pruners." They care little for the tree or its appearance, but have a great care for the "dollars" in sight. Not one in twenty understands the object and gain of well-considered pruning. Pruning regulates the form of the tree and causes it to become more fruitful, with larger and better fruit. If practiced to too great an extent, the desired result is not obtained, for every tree must have a sufficient amount of foliage to absorb the flow of sap, otherwise it will send forth a great number of suckers, which are certainly injurious to the tree. Blossom buds are produced less abundantly, as the foliage is necessary to promote the health and vigor of the tree. On the other hand, all dead and surplus limbs, which are only harbors for dirt and vermin, should be removed from the center of the tree, to encourage fruitfulness in the center of the tree as much as possible. It should be borne in mind, however, that the citrus family has always a luxuriant and heavy growth of foliage.

As a conclusion to the above remarks, the best rule that can be given is this: Watch your trees carefully, give them plenty of care, and keep them clean, healthy, and vigorous. The golden harvest will soon follow, and with it success and profit.

THE ALMOND IN CALIFORNIA.

By ALDEN ANDERSON, of Suisun.

From the standpoint of the botanist, the almond has been classified as a fruit, and the tree a native of southern Asia. Its propagation has been extended, however, and it is now extensively raised in all countries near or bordering on the Mediterranean Sea in Europe. After crossing the Atlantic a broad leap is made, and the only place in North America where it is raised in commercial quantities, outside of a few in Arizona, is California. It will, therefore, be seen that it favors a temperate climate and immunity from killing frosts.

The first plantings of almonds in this State were generally for ornamental purposes, or, perhaps, a few trees for variety in the family orchard. One of the first in California to recognize its commercial value was Mr. A. T. Hatch, then of Suisun, who became interested from observing the fruit of a few trees in his own and his neighbors' dooryards.

This first planting consisted of two hundred trees of an imported variety, the Languedoc, as were the first plantings generally, on his home place in Suisun Valley in 1872; and as indicative of the probable life of an almond tree in California, it is interesting to state here that the most of these trees are yet living and bearing as well now as at any time since attaining bearing age.

Not satisfied with the quality of the output of this orchard, Mr. Hatch went to experimenting, and several years after, it is of record that he had on exhibition at one time one hundred and ninety-three different varieties of almonds. From all these he gradually eliminated the poorer ones, until he had left six or seven varieties, which were eventually reduced to three varieties, consisting of the Nonpareil, I X L, and Ne Plus Ultra. These he himself proceeded to extensively plant in various parts of the State, and as the subject attracted more and more attention, and he became recognized as an authority, it was but natural that his varieties were mostly planted.

To the above enumerated was soon added another variety for general planting that has made its way by sheer force of merit. This is the Drake Seedling, first raised by Mr. H. C. Drake in Suisun Valley, and from a tree that was a sport from the roots of a nectarine tree.

Although it would now be possible to get together at least fifty different varieties of almonds during the harvesting season in California for exhibition purposes, some of them having much merit, the above named form the bulk of the almonds planted in or shipped from California at the present time.

From this list, for planting purposes, can be eliminated the Languedoc, which is now seldom if ever planted.

Which of these varieties are the best to plant? This question can not be answered correctly without knowing the location, climatic conditions, etc., of the intended orchard. Some varieties do better in one district than they do in another, and some will do well in one district and be a rank failure in all respects in another.

The two most popular varieties, generally speaking, with both the trade and the producer, at present are the Nonpareil and the Drake Seedling. It would not be advisable, however, no matter how sure we were that the particular variety we favored matured to perfection in the chosen location, to plant solid blocks of any one variety of almonds. Too little attention has been paid thus far by the planters of almond orchards to the matter of cross-pollination, so as to have mutually fertile varieties, that bloom at the same time, planted near together. To this fact can be traced most of the failures in this branch of orchard work. In most almonds there is a tendency to self-sterility, the tendency varying in the different varieties. Like the matter of selecting varieties, no exact rule can be laid down; but this much can be said, that no almond orchard so far has been a success that did not have the opportunity of cross-pollination, either by proximity or through the medium of bees or other insects. When the orchard is a large one, bees and insects can not perform the necessary work, and proximity is the only remedy. What varieties should be planted in proximity for this purpose can not well be given, as different kinds blossom at different comparative times in the several districts, and some varieties partake so much of the nature of others as to be entirely useless for this purpose. Experiment and observation are the only recourse.

As regards location, the best site for an almond orchard is on the first raise of land or lower slopes of the foothills, if the soil be of the proper kind. Such locations are generally the most immune from killing frosts.

The soil should be a sandy or gravelly loam, and the almond will do well in much drier soil than any other fruit. The chosen varieties of nuts should be worked onto the bitter almond stock in the nursery.

The trees in the orchard should be planted at least twenty-four feet apart, and be pruned or cut back the first two years. After this, a yearly thinning out and the removal of superfluous wood and suckers is sufficient.

The harvesting of almonds should commence as soon as the outer covering bursts enough to disclose the nut. Great care should be taken to see that the almonds, after hulling, are fully and carefully dried. When ready to put on the market they should be carefully bleached. They should not be exposed to the fumes of the sulphur for more than from twenty to thirty minutes, according to the bleacher arrangements. Many almonds are ruined by over-bleaching, and as this process is entirely unnecessary except as a matter of appearance, it is to be hoped that some other way of brightening them will be discovered and adopted. It would be better if the system could once be well inaugurated of taking the almonds from the trees to cracking machines, and the kernels or meats alone marketed. It would mean much to the industry. Not only could the crops be harvested cheaper, but much more satisfaction would be given to the consumer. The demand would be increased, and no further complaint of rancid nuts would be heard.

It will be seen that the almonds most extensively grown at present were originated in this State. There are several other new varieties, partly without names at present, that give splendid promise of being profitable to producers and acceptable in all respects to the trade, which really means the consumer.

On the whole, the industry yet offers good inducements to those who will go into the subject intelligently and exercise care in selecting the location of the orchard, and of varieties, and the planting and caring for the trees in the orchard.

THE WALNUT INDUSTRY.

By FRANK E. KELLOGG, of Goleta.

In the language of the late B. M. Lelong, Secretary of the State Board of Horticulture, in his fifth biennial report (1895–6), "the walnut is a native of Persia and is supposed to have been introduced into our State by the Franciscan monks during the establishment of the California missions in 1769."

Mr. Lelong's researches show that of the early plantings outside of the Missions, the first was made in San Diego, probably in 1843, by the late Colonel J. J. Warner, and that the second planting was made near Calistoga, in Napa Valley, in 1848, by F. E. Kellogg, Sr., now deceased.

Although the planting of walnuts began in the northern part of the State almost as early as in the southern part, climatic conditions were not so favorable, and the southern counties are to-day almost the sole producers.

The early plantings were very small, and it was not until quite recent years that the industry assumed important proportions.

Santa Barbara County was the first section of the State to enter upon the business on anything like a large scale, and it also enjoys the distinction of having originated what is now commercially known as the soft-shell, and which was for many years known as the Santa Barbara soft-shell.

The soil required is a deep, sandy loam, with a slight mixture of adobe, with no underlying hardpan, and where the surface water is found at from ten to twenty-five feet in the dry season of the year.

The climate best suited to the production of English walnuts is that where the annual rainfall is from fifteen to twenty inches, where frosts are very light in winter and spring, where very hot winds do not prevail in summer, and where there is an abundance of warm, moist fog during the summer months. Some of these conditions are lacking in every State north and east of us, and only very few counties of this State possess the proper climate, and of these counties only small portions of them meet the necessary requirements. The peculiar conformation of the coast-line and mountain ranges south of Point Conception, together with the modifying influence of the outlying islands, combine to give these favored localities in Southern California a climate that seems to be as perfectly adapted to the walnut as that of Persia itself, its native home.

There are three principal varieties grown in Southern California, known respectively as hard-shell, paper-shell, and the soft-shell previously referred to. The most profitable of these varieties is the soft-shell. The trees are the thriftiest, bear the youngest, mature the nuts earliest in the season, and produce the most abundantly; the nuts are the most easily harvested, require the least care and skill to prepare for the market, look the best, and command the highest price.

The planting, cultivation, and general care of the walnut does not differ materially from that of other orchard trees, except that no pruning is required further than to remove the branches which interfere with thorough cultivation.

For many years the walnuts were considered to be immune from all diseases and pests. But in the last few years there has appeared in some localities a well-defined disease peculiar to the walnut, as it seems to attack no other kind of tree. This disease is giving the growers much uneasiness, as it has thus far defied all efforts at eradication. It does not seriously affect the health of the tree, but only damages or destroys the nuts, acting as a kind of blight. As yet its cause is wholly unknown. Although its ravages have seriously affected only a few localities, it is becoming more or less of a menace to the industry. Government experts, as well as the growers themselves, are making a very careful study of the disease, and it is to be hoped that they will speedily discover both the cause and the cure.

The harvesting, grading, bleaching, and marketing are all simple, requiring little skill.

The average yield of a good soft-shell orchard in its prime, and under favorable conditions, will exceed one ton per acre, and the average selling price will exceed $150 per ton. The net profits per acre will exceed $100.

The trees come into profitable bearing at eight years from the planting of the nuts, reach their prime at twelve years, begin to decline at twenty years, and should be replaced by young trees at twenty-five years. By planting two- or three-year-old nursery trees the orchard comes into profitable bearing in five or six years.

The output of the present year will exceed 6,000 tons, the proceeds of which will exceed $1,000,000. But these results will be greatly surpassed in the near future, when the orchards recently planted come into their full fruitage.

FUTURE OF THE INDUSTRY.—Although the quantity produced is rapidly increasing, there seems to be but little danger of over-production, or that the profitableness of the industry, if wisely managed, will seriously diminish for many years to come. As already shown, the area of successful culture is comparatively limited. You can find a hundred acres adapted to the orange, the lemon, the olive, the prune, the apricot, or the raisin grape, where you can find one adapted to the walnut; hence, the output must always remain comparatively limited.

At the present time vast quantities of nuts—chiefly walnuts and filberts—are imported from foreign countries to supply the American markets. Only four years ago these foreign importations far exceeded our entire product, and I presume they still do. This simply proves that if the home market continues to show a preference for our product in the future, as it has for the past few years, we are in no danger whatever of over-production.

Added to all this, the rapid increase of population in all the States east of us, removes still farther into the future the possibility that the supply will exceed the demand. And as long as the demand is greater than the supply, there should be no diminution of the satisfactory prices now prevailing.

NEED OF COÖPERATION.—There is only one thing that threatens the decadence of present prices, and that is the lack of coöperation on the part of the growers. In this age of shrewd speculation and fierce competition, whatever industry fails to resort to concentration of interest is doomed.

Under the high pressure of twentieth century methods and conditions, everybody but the farmer has learned that competition is the death of trade, and that its life is only found in coöperation; and the time has fully come when, to secure their rights and promote their best interests, farmers must unite, as other classes have already done.

The railroads have combined, and they are able to fix rates and fares on the principle of charging all the traffic will bear, and the farmers of the United States, in consequence thereof, pay enough in excess of just charges on the transportation of their crops to probably build and equip a transcontinental railroad every year.

The steel industry has combined, and it is able to pay the president of the combination, if we include his commissions, a salary which is more than four times the salary of the President of the United States.

The oil industry has combined, and the corporation is rolling up its wealth by the hundreds of millions.

Coöperation seems to permeate the very air we breathe, and all classes of workers, except the farmer, have caught its inspiration. He has stubbornly refused to coöperate, except in a few instances, and as a result he has become the victim of almost everything and almost everybody. A good many people imagine that his lot is a highly favored one; that all he has to do is simply to plow the ground and sow the seed, and then sleep or recreate himself until the harvest time, when he can reap his fields and exchange the products for cash. But the facts are far different. The chinch bug destroys his wheat, and the grasshoppers and army worms sweep his fields. Scale bugs infest his citrus orchard, and the codling moth his apple trees. All kinds of peddlers, and life and fire insurance and lightning-rod agents make him their prey. The papers call him a hayseed, and he becomes a shining mark for the cartoonist. About the only man who extends to him a glad hand is the politician just before election day.

Already an appalling number of farms are under mortgage. I am persuaded that unless the farmers speedily learn the value of coöperation and fall in line with the universal trend of modern industry, a gigantic system of tenantry will take the place of the once happy, independent rural homes, so long the pride and safeguard of the American republic.

The raisin-growers and citrus-fruit exchanges have perhaps advanced the farthest in coöperative effort of any agricultural industries, and the success which they have achieved should be a convincing object lesson not only to the walnut-growers, but to all farm industries. The walnut-growers themselves have demonstrated the great value of concentration of interests in the marketing of their crops and the maintaining of prices. But thus far they have only met with partial success, owing to the fact that so large a percentage of the growers refuse to join associations. These outside growers have it in their power to break the market at any time, which results in a feeling of uncertainty in prices, highly detrimental to the industry.

Furthermore, the combination of the associations themselves is very far from being a satisfactory arrangement, for instead of being just one exchange, as it should be, they are organized into a multitude of individual exchanges, with no stronger authority for enforcing obedience to general rules and regulations than simply the word of honor. Of course, this ought to be as binding as any law, but somehow it does not prove to be an unqualified success in commercial affairs.

Also, the present arrangement does not by any means do away with competition entirely.

It is to be hoped that as the years go by the benefits of coöperation will appeal more and more to the intelligence of the growers until they shall all belong to the exchanges, and that the exchanges, instead of maintaining their individuality in such a manner as to keep alive the spirit of competition, will unite in one common exchange, in which the welfare of one becomes the welfare of all. Under such conditions, coupled with our natural advantages, I am persuaded that there will be a great future for the walnut.

The Convention then adjourned until Friday, December 6, 1901.

PROCEEDINGS OF FOURTH DAY.

FRIDAY, December 6, 1901.

Convention called to order at 9:30 A. M. President COOPER in the chair.

This morning had been set aside for discussion of railroad transportation, but Mr. Stephens, chairman of the Committee on Transportation, not being present, the matter was deferred.

COUNTY HORTICULTURAL BOARDS, AND WHAT THEY HAVE ACCOMPLISHED.

BY H. P. STABLER, OF YUBA CITY.

The statement has been made that California was the first State to invoke the aid of legal means in waging warfare against insect pests. Whether or not first in this work, California has the reputation of having accomplished better results in the effort to exterminate fruit pests and diseases than any other part of the world. Our methods, and the successful remedies in use, are copied and applied in every quarter of the earth where horticulture is established.

Our plan is in advance of the methods in practice elsewhere, and consists of a State Board of Horticulture of nine members, with County Boards of Horticulture in twenty-nine of the fruit-growing counties of the State. The Legislature has wisely granted great power to the State Board, and, by appointment as quarantine guardians, this authority is in turn vested in the members of the County Horticultural Boards. Thus the county commissioners become the agents or deputies of the State Board of Horticulture, and are charged with enforcing the State law and the quarantine regulations of the State Board.

The County Boards with their deputies, known as local inspectors, constitute an energetic, earnest body of men, who are continually working for the suppression of pests and diseases. The work of these officers is characterized by its thoroughness, and the fruit-growers of California have come to look upon the county commissioners as valuable assistants in their industry.

It is not many years since some nurserymen considered an inspection of their stock an intrusion on the part of the county commissioners, and occasionally resorted to unfair methods in avoiding inspection, but to-day the nurseryman realizes more than ever the advantages of being able to offer clean stock for sale, and invites the closest examination of his trees before placing them on the market.

The shipper and dealer formerly paid little or no attention to the pests infesting fruits; but when the quarantine officers at the point of destination of the shipment began to dump boxes of his goods, he realized that clean fruit had an increased value over the other kind. Unquestionably every one in the fruit business is alive to the necessity of thorough disinfection of infested and infected places, and great strides have been made in the past decade in arousing this sentiment in California.

Washes have been thoroughly studied, their manufacture simplified, and their application intelligently accomplished. Parasites have been distributed, propagated, and studied, while fumigation has received careful attention by the fruit-growers of California. In all this work the County Horticultural Boards have been foremost. In carrying out the instructions of the State Board and assisting in experiments the County Boards have always been active.

The work of the Agricultural Department of the State University has been beneficial to horticulture by the coöperation of the County Boards, and by constant communication with the professors of the college. Even the important investigations of the Agricultural Department at Washington and the work of the agent of the Department on this Coast, Professor Pierce, of Santa Ana, have been eagerly received and communicated by the County Horticultural Boards.

In short, the advanced position of California horticulture to-day, while it is due, of course, to very many causes, is largely the result of the untiring work of these officers in the fruit districts.

For eleven years the members of the County Boards have been meeting in annual session at the same time and place as the Fruit-Growers' Convention. At these meetings the officers of the State Board, university professors, fruit-growers, nurserymen, and others interested have gathered for conference and instruction, and a better understanding of our quarantine laws, and of the nature and method of extermination of pests, has resulted. In fact, much of the success of the quarantine officers has resulted from the uniform work carried on in the counties, and from a discussion of methods in these annual gatherings. Proposed legislation, both State and National, is taken up and discussed at our meetings, and ordinances in effect in various counties are compared, with a view of reconciling differences and securing uniformity. A uniform certificate of inspection has been adopted, and is generally used, and new remedies and improved methods of application are exploited.

Many of the County Horticultural Commissioners are making entomologists of themselves, and the work of several of them has been recognized by the National Government. The constant and thorough investigations by this body of intelligent workers in our fruit districts have been of greater value to horticulture in our State than any other feature of our industry. The work is carried on quietly, without display, and while it has seldom received public recognition outside of the reports of the State Board, it has accomplished great results and is destined to achieve more in the future.

THE FRUIT-GROWER AND HIS WORK.

By J. W. NELSON, of San Francisco.

In all of the wide domain of industry there is no calling more important to the welfare of the State and more concerned in its upbuilding than that of the fruit-grower. Seeing that at present it contributes not less than $40,000,000 to the income of the State, and that in a decade this will be increased to not less than $100,000,000, some idea of its value to the State may be formed. The fruit industry of our day in California leads all others, and indeed, it is certain that in time to come California will be the great fruit-growing State of this wonderful country. Already the product of its valleys and hillsides is sold in all civilized markets, and the fame of its fruits has reached the ends of the earth. Owing to the fruit industry, great tracts of country are being raised from a condition of poverty and barrenness to one of fertility and smiling plenty. Twenty years ago the Santa Clara Valley was for the most part for half the year, bare, brown, and forbidding, while its people for the most part also were in a condition bordering on chronic bankruptcy. Some benefactor of his race suggested turning the unprofitable wheat and barley fields into fruit orchards, and to-day Santa Clara Valley is a synonym for plenty and prosperty. We doubt if, for its size, there is a richer county in all California.

Even the golden treasures of '49 do not begin to compare with the orchards of this State. Take Fresno, the home of a happy, prosperous people, once a barren desert, made rich by fruit culture. What would Los Angeles, Riverside, Pasadena, San Diego, Orange, and other famous places in Southern California be without their citrus-groves, their beautiful vineyards and orchards of deciduous fruit? We know what they were in the day when the Mexicans and Indians were thinly scattered over the land. In the main, no more God-forsaken localities could be found on his footstool; but fruit culture, with its magic wand, has transformed them into spots of beauty, only comparable to those pictured in the "Arabian Nights" and "The Wonderful Adventures of Aladdin." The fruit-grower has done his part in helping to bring prosperity to California and comfort to the people. But his work is as yet only in its incipiency; it is his task to make beautiful the waste places and to fill the land with smiling homes, with fruits and flowers. What more beautiful than a country filled with well-kept orchards? Here nestle the vine-embowered cottages of the people. Around, spread orchards and vineyards, olive plantations and orange groves; in spring, a world of blossoms of the most variegated hues cover the trees; the whole country side is a mass of bloom freighted with the hopes of a fruitful autumn. There, as it were, a summer that promises to be perpetual breathes through the land, followed by the fruitage and the brilliant sky of autumn.

Every man engaged in fruit-growing should love his vocation; otherwise, he has missed it. He should be a lover of the beautiful and the useful combined; he should be an enthusiast by nature, and give all possible attention to matters of climate, soil, and description of fruit, suited to all various conditions that environ it; he should know that fruit trees of different kinds affect widely differing locations and surroundings. Like individuals, they have their peculiarities, and will not flourish amidst uncongenial surroundings.

Apricots do best in the country around the Bay of San Francisco; they need the salt air. Peaches do not do so well in the same section; they require the warm air of the valleys; and so on of others. The mountains and the foothills raise the best apples. The warm sheltered valleys from the borders of Oregon to those of Arizona are the homes of the citrus fruits. How beautiful are the trees, especially the fruit trees, now the glory of the land. In all ages mankind has loved the trees, their blossoms, fruit, and foliage. "Let me see the trees; I love the trees, they are so beautiful," were among the last wishes of the dying President.

The orchard is California's heritage, and every man in the State should speak on all occasions of the beauty, variety, and superior quality of our fruits; especially should this be done when we have the stranger within our gates; and the East is sending forth its people by thousands to learn of the practical opportunities of life in California. By proper study of climate and soil, of varieties and their proper treatment, of marketing and producing none but the best, we shall treble the present demand for California fruits.

The orchardist should study soil and climate well. He should procure the best varieties, and cultivate none other. He should study the best methods of packing and preparing for market. There is always a demand for the very best kinds of fruit, no matter how large the production may be. Witness the olive orchards of Italy, southern France, Spain, and other countries. Witness the vine-clad hills of France. For three thousand years or more around the basin of the Mediterranean these fruits have been cultivated; they are found in every favorable location, but there is no surplus of production. They bring the highest prices, and a small olive orchard or a small vineyard is equivalent to a fortune. The horticulturist should send none but the best fruits to market and should leave the inferior kinds at home—make brandy or vinegar of them, feed them to the hogs, or utilize them in some other way. By doing this he will help to create a demand for good, wholesome fruit, and make it popular as a part of the dietary among the masses of the people. In this way, in course of time, it can be made a most important adjunct to bread, the staff of life, and take to a large extent the place of meat on the tables of the millions. Thirty to fifty dollars a ton is considered a good price for fruit, that is to say, 1½ to 2½ cents per pound. It is thus much cheaper than meat. Let fifteen million families consume on an average three pounds per day, and we have an annual consumption of 16,425,000,000 pounds. This will give an idea of the extent of our market. Of course, I do not anticipate such a consumption to-day, but meat is constantly growing dearer, and soon will be out of reach of the poorer classes of our population.

A man must be born with a taste for the business of fruit-growing and taking care of trees. He must acquire it by very thorough education; if not, he will certainly fail. This is not the day when you can give the people any old thing in the shape of fruit. It must be good, or they will have none of it. There never was a more splendid opportunity than the present for the fruit-grower, and indeed for all interested in the welfare of the State, to advertise California fruit. The hotels in San Francisco and throughout the interior are filled with Eastern visitors who have come to see what California is like. Every chance that offers itself to show them what California fruit is should be taken. The hotel-keeper should make his tables groan under the profusion and variety of choice fruits: the citrus fruit of the Southland, and the deciduous product of all California. Our splendid mountain apples should be found side by side with the oranges and lemons of Los Angeles, Riverside, San Bernardino, San Diego, and of Placer and other localities of the north, with canned peaches, pears, apricots, and other preserved fruits from the California Fruit Canners' Association, prunes from Santa Clara, raisins from Fresno and other counties, and grapes from all parts of the State. Instead of European wines, the very best vintages of California should take their place, and a pride should be felt in so disposing of everything that our guests shall see California in her very best light. And the private citizen, in extending California's proverbial hospitality to the strangers within our gates, should vie with the semi-public functionary in making as liberal a display of California's choicest products as circumstances will allow. And the fruit-grower should coöperate in the good work, and wherever possible there should be public displays of our fruits. For this purpose fruits in jars are the most convenient, and the beauty and richness of the product leave an indelible impression on the mind of the visitor. And while I am on this subject, I would recommend that those interested should enlist the all-powerful aid of the press, remembering, too, in this instance, that the laborer is worthy of his hire.

In receiving our visitors everything should preach the gospel of California fruits. There is no more beautiful, and withal healthful, or remunerative occupation than that of the fruit-grower. In the scripture of the Old Testament, no more beautiful picture is afforded of prosperous, contented, and happy life than that of the reign of King Solomon, "when every man sat under his own vine and fig tree." The highest conception of earthly bliss is that Eden where primeval man enjoyed on this earth a perfect happiness, not only reposing in its bowers, but taking pleasure in its labors "that he might tend it and keep it." And when we speak of the happiness that awaits the spirit of the just beyond the gates of death, we speak of it as Paradise. The fruit-grower should not be greedy to own wide extending orchards; ten or twenty acres, when properly cared for, can be made as remunerative as fifty, and quality, not quantity, should be his motto. And my parting word to the fruit-grower would be: "Do not try to do too much; produce everything of the best, and happiness and competency will await you."

SCALE INSECTS AND THEIR PARASITES.

By EDWARD M. EHRHORN, of Mountain View.

It is ordained by the Supreme Ruler of the Universe that all living things shall not become burdensome upon one another, and we find that this great law is not only appurtenant to the larger animals and plants, but is found to extend down to the most minute organisms, some so small that a good microscope is required to detect their existence. We find that, through artificial means, these conditions have somewhat changed and in some instances have caused great destruction to various industries. Thackeray is quoted as saying that "parasites exist always," and the truth of his saying is probably best illustrated by the various families of insects preying, as they do, upon beast and plant, but largely, also, upon one another.

Agriculture in all its various branches has no doubt had more than its share of parasites. The cattle-raiser, sheep-raiser, grain-producer, and, last but not least, the fruit-grower, have all had their share of destructive insect enemies, and at times very much more than their share. The tsetze-fly and bot-fly kill thousands of cattle annually. Thousands of sheep succumb to the ravages of the gadfly, scab-mite, and lung parasite. Tens of thousands of acres of grain are annually destroyed by the Hessian-fly, chinch-bug, and innumerable other pests; and we fruit-growers have pests without number infesting our trees and vines, in every part and at all periods. We find them attacking the plant from the minute rootlets to the uppermost twigs, on trunk and branch, on twig, leaf, and fruit. There is no part immune from their attack, or that does not suffer from their presence. Minute as these pests are, microscopic even, they are sufficient to reduce our profits, largely increase our labors, and give us infinite worry and anxiety.

Probably the most persistent, annoying, and destructive group of insects with which the fruit-grower has to contend is the scale insects or Coccidæ, and the object of this paper is to discuss this particular group more in detail.

Scale insects (Coccidæ) belong to the order Homoptera, and are closely allied to the Aphis, or plant-lice, family in their habits, but differ greatly in appearance. Some confine themselves to a single genus of plant, while others attack a great variety, and, when present in great numbers, soon cause the plant to lose its vitality, and if not checked in time, will soon kill it.

Scale insects have been known from time immemorial. The beautiful and impressive color of the curtains of the tabernacle and of the robes of the priests, which brought awe and inspiration to the tribes of Judah, is said to have been obtained from a scale insect (*Kermes ilicis*). This insect is still used as a dye in some remote parts of Europe, and in some parts of Spain the inhabitants, mostly women, help support their families by collecting *Kermes*. The cochineal insect (*Coccus cacti*, Linn.) has been used as a dyestuff for a very long period. Our shellac of commerce is the product of a scale insect (*Tachardia lacca*), and was known in 1781. There are many other species whose usefulness was well known, and it shows that in olden times scale insects were mostly considered beneficial, and although one or two are still so regarded, yet, as a whole, they are very injurious.

Horticulture has made such rapid strides within the last fifty years, and the orchard area has increased to such an extent, that scale insects have, so to speak, found themselves in clover, and many species have taken hold of the new food which man has seen fit to propagate. Very few of our native species have changed their habits or their food plants, and most of the troublesome species we have to do battle with are imported from foreign countries. The orchards of California have been troubled by these pests for more than thirty years, and some species which once threatened our industry, especially the cottony-cushion scale (*Icerya* *purchasi*) and the San José scale (*Aspidiotus perniciosus*, Comst.), have been conquered; but other species have taken their places, and to-day we find our trees infested with many scales of which my time will allow me to make but brief mention.

On evergreen and deciduous trees, the Black or Olive scale (*Lecanium oleæ*, Bernd.). This insect can be found everywhere from the mountain tops to the ocean's edge, on native and cultivated trees, and shrubbery. It is a foreign species, but its native home is not positively known. Some say Australia, some say Europe, and others South Africa. It is easily recognized by its color and two transverse ridges on its back, crossed by a third ridge, forming a capital "H". In the orchard it infests the olive, orange, lemon, apricot, peach, prune, pear, fig, and also all ornamental plants, such as oleanders, pittosporum, rose, geranium, peppertree, and many others. It has numerous enemies, but none seem to be able to cope with it satisfactorily. While it is true that the imported ladybird, *Rhizobius ventralis*, and the native species, *Chilocorus bivulnerus*, and others will keep it in check in evergreen orchards, we find that our deciduous trees do not offer enough protection for these during the winter season. Several true parasites attack it, but are not able to cope with it in a manner to be relied upon. The chalcid fly (*Tomocera californica*) will reduce it from thirty to seventy-five per cent, but the remaining scales contain sufficient eggs to again stock the tree. In Australia, Italy, and South Africa, this scale is kept in check by parasites to such an extent that it is hard to find any. We have succeeded in importing some of these parasites, and hope ere long to see some good results. To show how efficient the South African parasite (*Scutellista cyanea*) is, I will read what Prof. Charles P. Lounsbury, of Cape Colony, has to say. In a letter dated January 30, 1900, he says: "It may be practicable to get the parasite established in California, but the task would be no trifling matter. There is a severe obstacle at the very start, viz., the rarity of the insect here, due to their subjection of the scale. *Lecanium oleæ* is not an orchard pest everywhere in the Colony, and only rarely do I find even isolated scales among cultivated trees; when I find them they are nearly always parasitized. On oleander, particularly where ill kept, in myophorum hedges, and on indigenous growth on the plains, is where I generally see the scale, and then seldom in large numbers. * * * You may imagine that under these circumstances obtaining the parasites, or even tracing their habits, is not easy."

Under date of April 10, 1900, writing to Mr. S. F. Leib, of San José, he says: "While I should much like to comply with your wishes at once" (referring to sending parasites), "I fear that the circumstances of the case will render considerable delay unavoidable. The black scale is so thoroughly subdued—just as the cottony-cushion scale now is with you—that it is by no means easy to get hold of it. Nobody here knows anything but the injurious species, hence help from farmers in finding colonies of black scale is out of the question."

Under date of May 15, 1901, Mr. Lounsbury further writes: "We have not forgotten you, but we have failed to find any more black scale fit to send. Cape Town and the suburbs are quite free again, the scale being few and far between, even in its haunts where the material sent last year was found. I quite expected my assistant would find a little about Port Elizabeth, our next largest town, some hundred miles east of here, but he writes that he has been unable to find more than an old scale here and there, and not a single twig worth picking."

Under date of October 23, 1901, Mr. Lounsbury further writes: "The black scale remains as scarce as ever here. We know plenty of places now where we can find a little of it, but the parasites are always there to keep it down. A few weeks ago we found enough low down in some oleanders to make a sending. The postoffice people would not warrant the packages passing unchallenged at New York with only 'sample post' rates paid on them, saying they thought they might get stopped, or at least delayed on account of their size, so I had letter postage paid—rather a neat little sum. We addressed them to Craw, with the suggestion that he might be able to arrange for them farther south in the State."

From the above we will readily see that if this parasite is ever established in California we may expect great things.

Next comes the Red scale (*Aspidiotus auranti*, Mask.). This pest is better known to the growers of Southern California, as it is one of the worst scale insects of the orange groves. It is one of the armored scales, and is very difficult to conquer. Its native country is not known exactly, but Australia has furnished it to California. When it first appeared with us it seemingly only attacked the orange, but now we find it infesting walnut, grapevine, rose, century plant, and many others. We have several ladybirds which feed readily upon this scale, among which are the twice-stabbed ladybird (*Chilocorus bivulnerus*), and the steel-blue ladybirds, *Orchus chalybeus* and *Orchus australasia*. These ladybirds no doubt cause considerable reduction of the scale, but we need a more effective parasite to cope with it. Mr. George Compere, special agent of the State Board of Horticulture, fortunately has been able to find one in China, and already several hundred have been successfully bred and liberated by Mr. Alexander Craw in the orange groves of Southern California. This parasite is very minute, and can hardly be seen with the naked eye, but it seems to be very active and very prolific.

Another scale very closely allied to *A. auranti*, and by many considered but a variety of it, is the Yellow scale (*A. citrinus*, Coql.).

This scale is not a dangerous one, as it has a very interesting and efficient parasite (*Aspidiotiphagus citrinus*, Craw) coping with it. Strange as it may seem, the yellow scale seldom attacks the wood of the tree, whereas the red scale attacks wood, leaf, and fruit.

The Soft Orange scale (*Lecanium hesperidum*) is another species which occasionally gives trouble, but owing to its parasites soon vanishes again, without having caused much trouble to the grower. This scale attacks a great variety of plants, and is a widespread species, readily recognized by its oblong, flattened shape. The two most common parasites which attack this species are: *Coccophagus lecanii*, Fitch, a very minute chalcid fly, easily recognized by a yellow band across the thorax, and *Microterys flavus*, Howd., a beautiful chalcid, which is very abundant and quite large in comparison with its co-worker.

A comparatively new scale insect, for California, is the Purple scale (*Mytilaspis citricola*, Pack.). This species made its first appearance in some orange trees imported from Florida into Los Angeles County in 1888. This is one of the worst pests of the orange, and I am glad to say that very stringent measures are being taken to completely eradicate it. Some very efficient parasites have also been introduced, which will, it is hoped, assist in checking its ravages. This scale does not attack deciduous trees.

The common Ivy scale (*Aspidiotus hederæ*, Bouche) is another general feeder, and at times becomes quite a pest on lemons. It is, however, kept in check by various ladybirds and numerous other parasites, among which are *Aphelinus fuscipennis* and *A. diaspidis*.

Three scale insects which are very injurious to deciduous trees are the Brown Apricot scale (*Lecanium armeniacum*, Craw), the Frosted scale (*L. pruinosum*, Coql.), and the Italian Pear scale (*Diaspis pyricola*, Delguer). The first two insects attack the apricot, peach, prune, and pear in some sections of the State, but are kept in check by the wonderful parasite, *Comys fusca*, Howd., and wherever introduced, so effective is its work at times that it has been impossible to find sufficient scale on the trees to collect material for introducing the parasite into other sections. It is well for those who find these scale insects established in their orchards to secure a colony of the parasite from Mr. Alexander Craw, of the State Board of Horticulture, as it will save them much labor and expense.

The Italian pear scale (*Diaspis pyricola*) attacks the pear, apple, prune, and peach tree. When the young limbs are badly attacked, it does not poison them as does the pernicious scale, but it causes deep depressions in the bark and materially stunts the tree. As yet we have no parasite which will reduce the pest, although the twice-stabbed ladybird (*Chilocorus bivulnerus*) will keep it down when exposed on the limbs. This scale has the habit of crawling under moss and lichens and thus protecting itself against the attack of parasites. Good oil washes have been successfully used as winter washes for its extermination.

Another scale which troubles the apple, and which is mostly found on old trees, is the Oyster-shell scale (*Mytilaspis pomorum*, Bouche). It is not really considered a pest, and has very many enemies. Our scale-eating ladybirds do their share in checking its spread, but several chalcid flies, viz: *Aphelinus mytilaspidis*, Le Baron, and *Aphelinus fuscipennis*, Howd., and others keep the pest from spreading. I have found this species on rosebushes and the passion-vine, and it is said to infest a number of other plants.

One of the most general feeders among scale insects is the Greedy scale (*Aspidiotus rapax*, Comst.), which infests pear, apple, plum, peach, cherry, and all kinds of ornamental shrubs. One of its favorite foods is the Texas umbrella, but even the blue gum is not exempt from its attack. The twice-stabbed ladybird (*Chilocorus bivulnerus*) and Pilate ladybird (*Exocomus pilatei*) feed readily on it, but I believe its best enemy is the chalcid fly (*Aphelinus fuscipennis*, Howd.). This is probably a native species, as we find it on all our soft-wooded trees and shrubs in very isolated places.

There are numerous other scale insects which have been reported as doing damage, but which as a general rule are not considered pests in the orchard. Among the most common are:

The Hemispherical scale (*Lecanium hemisphæricum*, Targ.), which is found on chestnut, orange, oleander, and others. This scale has numerous parasites;

The English Walnut scale (*Aspidiotus Juglans-regiæ*, Comst.);

The Rose scale (*Aulacaspis rosæ*, Sandb.);

The Willow scale (*Chionaspis ortholobis*, Comst.);

The Pine scale (*Chionaspis pinifoliæ*, Fitch);

The Insignis Pine scale (*Physokermes insignicola*, Craw);

The Cottony Maple scale (*Pulvinaria innumerabilis*, Rath.); and a few Mealy bugs. All of these are probably controlled by natural enemies, as they have never been known to spread in great numbers.

The Cottony-Cushion scale and the San José scale, as mentioned above, demonstrate what we can expect from beneficial insects, provided that we can find the right one in its native land.

Before closing, I wish to call attention to the many close calls California has had in introducing some of the worst scale insects known to infest trees in foreign countries, and which were only prevented from being established in our orchards by the establishment of a quarantine department and its strict regulations, by a thorough system of orchard and nursery inspection, and by the vigilance and conscientious work of the Commissioners and the Quarantine Officer.

Thousands, yea, millions, of dollars have been saved to the fruit-growers of the State through the establishment of the State Board of Horticulture and its Quarantine Bureau, and shall we stop at this? I say, NO. Let us, if anything, widen the field; let us ask our legislators to give us more aid, so that we may not only prevent the introduction of pests, but also add to the army of our microscopic friends, those which are waiting for us in foreign lands whence came their natural food.

THE WHITE-FLIES OF CALIFORNIA.

By C. W. WOODWORTH, of the University of California.

Orange-growers of Florida have given the name "White Fly" to the very injurious species of Aleurodes attacking citrus trees. This term had, at one time or another, been previously employed as a popular name for quite a variety of insects, but it had never gained any general currency. The name will now doubtlessly be appropriated by this new fruit pest, to the exclusion of the members of other groups of insects, and can be very appropriately extended to all members of this family. It will be analogous to the use of the florists' name "Green Fly" for the members of the related family Aphidæ. The interest in the white-fly family rests almost wholly upon the injury done by the white-fly of the orange. Other members of the group have at times done some appreciable injury to the various plants, but certainly it is only during the last few years that there has been any very serious financial loss for which they may be held accountable. The seriousness of the situation in Florida can be realized when it is understood that the white-fly is considered the most injurious insect attacking citrus trees—much worse than any of the scale insects. Perhaps not much worse than the injury due to scale insects in California, since the amount of moisture in Florida renders a scale attack there less severe than here, as it seldom or never results in the death of the infested trees. The injury done by the white-fly in Florida resembles very much that due to the black scale in this State, but I am inclined to think the loss there is greater than with us, because it appears that the smut fungus is very difficult to remove, indeed it seems impossible to remove it entirely. The difference between California and Florida fruit was so conspicuous in the past season in Eastern markets that each could be recognized as far as seen. The presence of smut fungus, as with us, does not entirely destroy the value of the fruit, but does seriously interfere with its sale.

I think that there is no evidence of this species of Aleurodes being found at the present time in California, and it is possible that it could not live under the climatic conditions in which we grow these fruits; but, of course, it would be the correct policy to take no chances in the matter of its introduction, for it is equally possible that it might prove as injurious with us as it has in Florida. We have quite a number of representatives of this family in this State, most of which are of little or no economic significance; but at least one species has, during the last year, proven its ability to damage grapevines in a very serious manner. The subject, therefore, of the Californian representatives of this family can not fail to be of interest to our fruit-growers.

The family Aleurodidæ is one of four closely allied groups which have been assembled by entomologists under the name of Sternorhynchs, the name being given because of the position of the mouth apparently upon the breast of the insect. These four families are:

First—Psyllidæ, a rather unimportant family of small, active insects called "Jumping Plant-Lice."

Second—Aphidæ, the largest family of the series, including all the plant-lice, many species being highly injurious; the best known in California being the phylloxera of the grapevine.

Third—Aleurodidæ, the subject of the present paper; and

Fourth—Coccidæ, or scale insects, the most notorious pests the California grower has to contend with.

The family thus lies intermediate between the plant-lice and the scale insects; it is rather more closely allied to the latter than to the former, but has many peculiarities of its own. The similarity is most evident while the insects are young, indeed a young white-fly might easily be mistaken for the young of a scale insect. The most striking difference between the two families lies in the fact that while the female scale insect is always wingless, both sexes of Aleurodes possess wings when full grown and resemble each other very closely.

THE EGGS.—Insects of this family always reproduce themselves by means of eggs. These are laid singly, and are attached to the leaves of the appropriate food-plant by means of a rather short but very characteristic stalk. The length of this stalk depends upon the species to some extent; but all the species lay such similar eggs that it would not be possible to distinguish them in this stage. If the egg of the lace-winged fly was about half as large as it is, and its stalk was reduced to about one third of the length of the egg or less, and slightly twisted, it would resemble quite closely the egg of an Aleurodes. The color of the egg is nearly white, and the leaf in the neighborhood of where it is deposited is usually dusted over with a white waxy secretion from the mother. This secretion often forms very distinct spots, in which case the eggs may be arranged somewhat in a circle, with the stalks outward. The species that lay their eggs thus regularly in a circle occupy themselves a long while in the process of egg-laying, remaining for days in one spot unless disturbed, and even then often going back to the point from which they were driven. They thus appear to brood over the eggs, which, together with the whitish powder already referred to, form a nest in which the mother sits. Other species move about considerably, and lay only one or two eggs upon a leaf.

THE YOUNG INSECT.—Upon hatching, the young insects very soon select a place upon a leaf and insert their beaks. They walk about much less than do the young scale insects, scarcely ever leaving the leaf upon which they hatch. Like scale insects, when once settled they are very loath to move, and in some species are entirely unable to do so, except at the moulting period. Thus, they become full grown and transform into adults, in most cases, upon or near the spot where they took their first meal. The insect in this stage is always very flat, oval in outline, in color usually either jet black or of a uniform pale-green tone like that of the leaf. The white-fly of the orange is one of the green species, and, being cemented fast to the leaf by its own secretions, is quite difficult to recognize, except upon very close inspection of the leaf. All members of this group secrete more or less waxy material, and in this case the wax when produced is fluid enough to accomplish this firm attachment of the body of the insect to the leaf. One of the commonest species in California, the one that feeds upon the common sow thistle, is also of this green color, but not so firmly fastened to the leaf.

The openings of the breathing system of these insects are always on the underside, quite a distance from the edge of the body, but communicative with the outside air by means of curiously developed grooves on the underside of the body, which remain open after the insect is fastened to the leaf. There are three of these grooves—one at the hind end of the body, and one on either side just back of the head. There is usually a slight difference in coloration along these lines, so that they can be clearly recognized from the upper side, because of the transparency of the body.

In the black species the wax is usually of a brilliant white, contrasting sharply with the general color of both the leaf and the insect, making the latter an extremely striking object. Sometimes this waxy secretion is in the form of a fringe, more or less matted together, extending around the insect along the extreme edge of the body. This is the case in the Aleurodes which has recently been found in destructive quantities upon grapevines in the northern coast counties.

There are numerous parts of the body upon which waxy glands may be developed. One of the most beautiful species that occurs in this State is found upon our common live oak. In this case the wax is not upon the extreme edge of the body, but projects up from the back in the form of broad, white flakes, of a very definite and regular shape. In this insect there are three small but very active wax glands, situated just over the ends of the breathing grooves, from which proceed long, delicate pencils of wax. The arrangement of the wax glands upon the body will doubtless be found to be one of the most available means of distinguishing between the various species.

THE TRANSFORMATIONS.—The transformations of these insects are accomplished by a series of moults. The insect at the time of moulting becomes suddenly active, not walking about the leaf, but keeping its beak inserted in and retaining its position on the leaf. This activity consists in bending the body up and down and contorting it to some extent, apparently in the effort to disengage itself from the old skin which it is about to discard. Soon there appears a split along the middle line toward the front end of the insect, terminating posteriorly by a transverse one not far from the region of the anterior breathing grooves. Out of this rupture the insect crawls, leaving the old skin upon the leaf. The freshly moulting insect soon finds a place not far off, and establishes itself. The old skin, which is only held by the beak, sooner or later becomes disengaged from the leaf, and falls off and disappears. Before the final moult, at which the insect becomes adult, there has been a great change taking place in all the internal organs of the body, as well as by the development of wings and legs, so that when this moult is accomplished the insect escaping bears no resemblance to its former self.

THE ADULT INSECT.—The body of the perfected insect is slender, the legs long, and the newly formed wings very large and conspicuous. Every part of the body is covered with a white powdery secretion, making it snowy white. As the white-fly rests upon the leaf the wings lie like a roof over the body, in such a position as to make the insect appear very broad and robust. The insect is very active, flying better than the members of either of the most nearly allied families. As in the case of plant-lice, the winged form is the chief or only ordinary means of distribution from plant to plant. Some species may be seen in the air in swarms, at times in company with plant-lice.

Like the plant-lice, also, these insects continue to feed after they obtain their wings, but it is during the earlier stages of their lives that they do the most damage to vegetation.

THE WHITE-FLY OF THE VINE.—Our most injurious species is the one that attacks grapevines. This insect has never been described, nor has any mention of it been made, in any publication upon the insects of the vine. As with all white-flies, the injury done by this insect is that which is caused by its fluid excretions. This, in the case of the present species, seems to be somewhat poisonous to the under surface of the leaves, producing an effect somewhat like that following the work of the red spider. On the upper side it is usually less evident, except where the insects are excessively abundant, when the whole surface may become blackened by an alteration of the contents of the leaf cells. This blackening is, in addition to the blackened appearance of the leaves, due to the accumulation of dust or the growth of smut fungus on the surface of the leaf like that which occurs on a plant affected by the black scale. These poisoning effects, of course, are scarcely to be noticed, except when the insects become excessively numerous.

Its Life History.—The life history of but few of the species of Aleurodidæ has been made out. Many of them produce but one brood a year, passing the winter as a nearly full-grown insect, which transforms quite early in the spring into the winged adult condition. Some that pass the winter in this way have a number of broods during the summer. Others in California are active and breeding all winter as well as summer, and this is true of those living on greenhouse plants.

A large number of the species in the colder climates, which live on deciduous trees and on annual herbs, have never been studied in the winter, and their winter history is entirely unknown. It is probable, however, that in most cases they had become fully fed before the leaves fall in autumn, but do not transform until the next spring, remaining merely attached to the fallen leaves during the winter.* The Aleurodes of the vine do not have this history, but possess the habit, hitherto unknown in this group, of transferring their attention, on the approach of winter, to an entirely different plant, the evergreen *Rhamnus californicus*, and returning to the vine the next spring. The insect is two-brooded; the adults that are produced on the grape leaves flying to the Rhamnus before laying their eggs, and those developing on the leaves of the Rhamnus likewise being impelled by instinct to seek a home for their young on the grapevine. This remarkable habit is similar to that possessed by a number of species of plant-lice and by some other insects, and may possibly be found true of a number of other Aleurodidæ.

Remedies.—The remedies for white-fly will ordinarily be the spraying of the plants in the same way as for plant-lice or scale insects. The flies are not difficult to kill, but are often hard to reach with a spray, because of their preference for the underside of the leaves.

In the case of the species attacking the vine the peculiar habits of the insect, described above, give the key to the most available method of control. If it is desired to kill the insect by spraying, the winter food-plant affords the best place to attack it, since while the shape of the leaf makes it very difficult to spray a grapevine satisfactorily, the

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*Since writing the above I learn that my brother, Mr. H. O. Woodworth, has been able to confirm this supposition for a number of species found on deciduous trees in Illinois.

Rhamnus is a very easy plant to spray thoroughly. The spraying of the vine would have to be done during the busy season, while the other generation can be sprayed at leisure.

The method that will be usually adopted for the extermination of this insect, however, is not by spraying, but by the destruction of the winter food-plant, since it is of no value and could be easily cut out.

Upon motion, the paper by Professor Woodworth was received and placed on file.

MR. BERWICK. I move you that the Chair appoint a committee of three on the matters connected with the Nicaragua Canal.

Motion carried.

HON. WM. JOHNSTON. I move you that the Chair appoint a Committee on Exhibits.

Motion carried.

WHAT CALIFORNIA HAS DONE FOR HORTICULTURE.

By ALEXANDER CRAW,
Quarantine Officer of the State Board of Horticulture.

Not only in the United States, Canada, Central and South America, but also in Europe, Australia, New Zealand, South Africa, and other countries, California is recognized as the most advanced horticultural country in the world. Representatives from all parts of the civilized world have been sent to this State, in most instances by their Governments, to study our methods of growing fruits, from the delicate citrus products to the hardy apple. Not only are our systems of planting, pruning, cultivating, and irrigating being closely studied and adopted, but also our methods of picking, curing, packing, and shipping have been copied, and other countries have been benefited by the enterprise of our people. Not only have new varieties of fruits been originated here, but some of the older sorts, under our improved system, take on characteristics that commend them to the eye and palate of the people of other countries.

In this short paper I will not attempt to enumerate the great number of choice fruits and flowers that have been brought into existence by artificial methods, or by the improved system of conducting all horticultural operations in this State, but will confine myself to what has been done to prevent the introduction of insect pests, also to the artificial and natural methods of controlling those that were imported before any restrictions were placed upon trees and plants entering the State.

California was the first State to pass laws for the promotion and protection of horticulture. This was in 1881. The horticultural law was amended and improved as the original law was shown to be defective, or that it could be improved, until now we have a law that is considered as near perfect as it is possible to get through a legislative body. As proof of that assertion, I may state that it has been so decided upon various points by several Superior Courts and by the Supreme Court of the State. Our efforts in this direction have been watched by other States and countries, and now few are without similar laws. A bulletin containing these horticultural laws and court decisions has just been issued by the State Board of Horticulture, and can be had upon application.

The Act creating the State Board of Horticulture gave that body the power to make regulations governing disinfection and preventing the spread of contagious tree diseases and fruit pests, and regulations were accordingly adopted aiming to prevent the further introduction of such pests. The people of several States claimed that our regulations were intended to cripple their tree business, so retaliatory measures were threatened if we did not relax our inspection regulations and admit everything in the tree line. Instead of resorting to such measures, however, they became more careful, and the necessity of protecting themselves yearly became more evident to them, so that now they have laws of their own, and we hear nothing of retaliation from the other side of the Rockies.

The adaptability of California soil and climate to the cultivation of fruits was early recognized by the Padres, and orchards were planted near their Mission buildings and by a few pioneers in other sections. Upon the change of governments, and occupation by Americans, fruit-growing made rapid strides, and upon the completion of the first overland railroad it received a great impetus, and new varieties of fruit and other trees were introduced from all parts of the United States and the Orient. With the plants came their insect pests and diseases. Our climate, that is so conducive to the production of fine fruits, is also favorable to the increase of insect pests, and they multiplied accordingly. Soon their injurious presence was made manifest by the yellow and stunted appearance of the leaves and trees. This was in the early seventies, and the orchardists had practically no method of combating such pests on the extensive scale that was necessary. Remedies were both crude and expensive, and the manner of applying them was both slow and wasteful. The old-time perforated "rose," for use in applying liquid remedies to orchard trees, was out of the question, so the Marigot nozzle was invented and manufactured by Wesley Fanning, of San José. This is now generally known as the "San José nozzle." Instead of the solution being applied to the tree in a heavy shower, it issued in the form of a fine spray, reaching nearly every portion, thoroughly saturating all the leaves and twigs without much waste. This nozzle was generally used when soapy solutions or kerosene emulsions were required. When the "lime, sulphur, and salt" remedy was found to be effective and was used for the "pernicious," or so-called "San José," scale, the San José nozzle was soon cut by the gritty nature of that solution. Here again our people were equal to the difficulty, and the Bean spray pump manufacturers, of Los Gatos, invented their "Duck Bill" nozzle. The name suggests the shape. The solution at the outlet strikes against a plate of hard rubber, which is more durable than brass. The fineness of the spray is regulated by a thumb screw. The short nozzles made it difficult to reach the tops of the trees, so the late Mr. Titus, of San Gabriel, Los Angeles County, thought of a simple way of overcoming this, by attaching half-inch gas pipe to the end of his rubber hose, and on this was screwed the nozzle. The pipe was of varying length, according to the height of the trees to be sprayed. Afterwards a bamboo rod, with a thin brass pipe passing through it, was invented, but it was not strong enough to stand lifting or displacing the dense branches of orange twigs and leaves necessary for the spray to reach every part, so this was discarded. From the old-time syringe and fountain pump used, with a bucket for carrying the solution, Californians advanced, and spray tanks holding from two hundred to five hundred gallons, and drawn by two to four horses or mules, was the next improvement to expedite the work of disinfecting orchards. The Bean pump, and other pumps with large air cylinders, was a long step in the right direction, as the compressed air and liquid in them keeps up a steady and continuous spray.

J. W. Wolfskill and L. C. Goodwin, of Los Angeles, were the first orchardists to use steam as the motive power in orchard-spraying machinery. This was in 1881–2. Their steam boilers and pumps were used from one to two years and then given up, because of difficulty in regulating the force. This defect was remedied by Mr. W. R. Gunnis and his son, R. H. Gunnis, of San Diego, who constructed a very satisfactory gas engine provided with a fly or balance wheel. Now a number of powerful gas and steam spraying machines are in use in this State, requiring very little attention in their management, and giving great satisfaction.

The use of sulphur as a check and remedy for "red spider" and all leaf-eating mites, mildew and other external fungi upon trees and plants, is well known to horticulturists, and was generally applied to the affected trees by the use of sulphur bellows or dusted from a sack at the end of a pole. It remained for Mr. George Ditzler, of the Rio Bonito orchards, Biggs, Butte County, to invent a machine that distributed the sulphur in a wholesale manner. Mr. Ditzler's machine is an ordinary grain-sower, with several attachments of his own invention.

The machine is mounted on a wagon drawn by two horses, and operated by gear from the wheels. Mr. Ditzler claims that by his invention he can sulphur more trees in one hour than one hundred men could in a day by the old process, and do it more thoroughly. The various parts of the machine are figured in Bulletin No. 67, of the State Board of Horticulture. There is no patent on the device, so any one is at liberty to make it.

My experience in the fight against the cottony-cushion scale (*Icerya purchasi*), in 1883–4, convinced me that some other method than spraying would have to be devised, if we were to be successful in keeping the pest in check in the orchards and gardens of the State. It was almost impossible to reach every portion of the citrus trees with spray pumps, owing to the dense foliage, and the trees in a few months after treatment were as seriously affected as before.

In 1885 Mr. J. W. Wolfskill, of Los Angeles, and the writer, began a series of experiments with gases and fumigation, and succeeded in killing the cottony-cushion scale and their eggs. A list of the gases used was published in the U. S. Agricultural Report for 1887. Mr. D. W. Coquillett, a former resident of Orange County, California, was greatly impressed with our work in fumigation, and conducted some experiments. One of the first was with hydrocyanic acid gas. The tree to which it was applied was badly damaged, but after a series of trials we succeeded in perfecting the work. This was in 1886. After our success Mr. F. W. Morse was detailed by Professor Hilgard, of the University of California, to conduct similar experiments. He also discovered the same gas, and was the first to publish the result.

Spraying and fumigation give only temporary relief, and are expensive. The writer urged the growers to send an expert to Australia to look up the natural enemies of the cottony-cushion scale, as it was from that country that the pest was introduced into California. A meeting was held in the Los Angeles Board of Trade rooms in 1887, nearly all the prominent orange-growers being present. Mr. A. B. Chapman, of San Gabriel, was chairman. Ways and means were discussed, and a committee appointed to raise funds for the purpose of sending an expert to Australia to secure the natural enemies. About that time two other Californians entered into the history-making work. The late Frank McCoppin, of San Francisco, was appointed United States Commissioner to the Melbourne Exposition, and in conversation with the late J. de Barth Shorb, of San Gabriel, asked what he could do in Australia to advance the interests of California. Shorb replied, "Take an expert with you, to find the enemy of the cottony-cushion scale, or we are all ruined." Mr. McCoppin generously put aside $2,000 of the funds appropriated by Congress for the use of the Commissioner, and Mr. Albert Koebele, of Alameda, was selected by the United States Department of Agriculture to undertake the work, and his discovery of the *Vedalia cardinalis* and its introduction into California saved the orange and lemon groves of the State and made Mr. Koebele famous the world over.

This is not the only instance of the benefits derived from beneficial insects in checking destructive scale and other pests. The soft brown scale was a very serious pest when first introduced, and destroyed bearing orange trees until it was checked by two species of internal parasitic flies. The yellow scale is not feared now, for a parasite from Japan keeps its numbers down. The once-dreaded San José scale is not so troublesome now, in fact it can hardly be found in the orchards around San José, and no spraying or fumigation has been done for years. A very small four-winged fly, belonging to the same order as the others I have just mentioned, keeps it in check. The brown apricot scale, that filthy pest of the prune, apricot, and peach trees, is rapidly disappearing from the orchards of Santa Clara, Alameda, and other counties, where its parasite has been established. I can enumerate about a dozen other internal parasites that have relieved the fruit-grower from ruinous expense.

We are now at work propagating two other internal parasites, which, if we succeed, will be worth hundreds of thousands of dollars to California. One is the insect that keeps the black scale in check in South Africa. I have recently received from Prof. Charles P. Lounsbury, Government Entomologist at Cape Town, two boxes containing these valuable insects. A number reached us alive and are now in a glass breeding case containing oleander infested with black scale. They took kindly to their new quarters, and I hope will increase. We have to breed them in confinement in order to prevent the introduction of a secondary parasite which preys upon them in South Africa. By keeping the secondary parasite out, we can reasonably hope to have as good, or even better, results than they have had in Cape Colony. The other parasite we are now propagating is a very minute chalcid fly that destroys the red scale. This was found in China, and introduced upon a small orange tree by George Compere, a collector of beneficial insects, and special agent of the California State Board of Horticulture. Owing to the "Boxer" trouble in China at the time of Mr. Compere's visit, he experienced great trouble and risk in securing the tree. We have it in a glass case, and the parasites are breeding remarkably well. The scales are more numerous than when the tree arrived from China. This is because we remove the parasites as fast as they breed and send them to infested orchards.

To California belongs the credit of first suggesting the introduction and propagation of beneficial insects for the purpose of benefiting her fruit-growers and farmers.

To California belongs the honor and credit of having furnished the following countries with insects that were of great value to them: Hawaii, Cape Colony, Egypt, Italy, Portugal, Ceylon, Jamaica, Florida, and several islands of the Pacific.

To California belongs the invention of many of the best sprays and washes now in use.

To California belongs the credit of inventing and perfecting methods for the fumigation of orchard trees.

To California belongs the credit of inventing many of the most approved appliances for fighting pests in the orchards.

To California belongs the credit of improved methods of packing and transportation.

To California belongs the credit of protective legislation for the benefit of our great industry, so beneficial in its operations that it has become the model for other States of the Union and other nations of the world.

And above all, and the cause of all our advancement along these lines, California must be credited with the most intelligent, progressive, and advanced horticulturists in the world.

DISCUSSION ON TRANSPORTATION.

HON. R. D. STEPHENS. Mr. Chairman, Ladies and Gentlemen: This is a question with which I have had a great deal to do, and I feel pretty familiar with it. The principles involved are expressed in the report, and I feel that it is important that this Convention should take a very important stand in the matter. I believe the reduction of time is one of the important factors, and I believe as much good to the grower can come from that as from any other one thing. I believe that the improved time we made last year in the shipments of deciduous fruits, although not great, has contributed much to the welfare of the growers in the State. I believe that that alone was instrumental in advancing prices to a very great degree. The reason is that it places the fruit at its destination, at the distributing points in the East, like Chicago, New York, Minneapolis, Boston, Philadelphia, and other places that are growing in importance, at a much earlier period, and it places the fruit there in a condition to be forwarded to places distant two or three hundred miles from those localities, and it will arrive at those places in a condition to be held for a day or two and still be in condition for consumption. Every fruit-grower recognizes that distribution is an important factor. And fruit can not be distributed to a greater degree than in the past unless it arrives in better condition than it has in the past, and you should not lose sight of the fact that refrigeration is still of the great importance it has been in the past. I believe that refrigeration has been the bane of the grower in this State. The immense profits made by refrigeration permitted the interests receiving those profits to eventually control not only distribution, but also the values to a great extent. All the growers ask is that they be placed on an equality one with another. We do not want advantages, but we do want equal rights and equal privileges. There is danger in the fact that the season past has been a prosperous one, comparatively speaking. Because of that fact we might remain nearly dormant and not make any protest against this power, and the railroad companies would then feel justified in renewing contracts with the refrigerator car interests that now have an absolute monopoly of refrigeration. The great influence that was used against Mr. Earl by the other competing interests did not crush him, for he not only owned refrigerator cars, but he controlled a fruit company that was interested in the transportation and selling of fruit. The fact was that Mr. Earl possessed a great advantage over his competitors. That was because he was able to contend against them, notwithstanding the millions at his competitors' backs. Mr. Earl derived all the benefits and profits of refrigeration, while Porter Brothers and the Armour line at that time are presumed to have divided the profits of refrigeration one with another, and it lessened their power, and that is why Mr. Earl was able to contend with these two great powers. Understand, now, that I am not here to make any tirade against any interests. They were thoroughly justified in doing as they did. Any individual here would avail himself of the position should it be offered him. They were in the business to make money and accumulate capital, as we would do if we were doing business in the same way. But it rests with the growers of the State to always look after their interests, and you should endeavor to protect your interests the same as they protect theirs. I am not here to criticise any action taken by them, and if I should criticise any one it would be you growers, because you should look out for your interests better than you do. In continual vigilance on the part of the growers of the State depends their prosperity. You must not expect those whose interests are diametrically opposed to yours to look out for you. We do not want any renewal of those contracts. We want the railroad companies to put on cars and do the business, the same as is done in Washington and Oregon. As I am informed, refrigeration does not cost the growers up there one cent. The maximum is $35 a car. I have a catalogue here showing that they sell Italian prunes in New York at less than an average of 50 cents a crate, and it costs me 54 cents for transportation alone to get them into New York. Of course, under those conditions, we can not compete with Washington and Oregon fruit. We do not want their rates raised, but we do want ours lowered, so as to put us on an equal basis with the growers of those States. Mr. Earl said he did not want to remain in the refrigeration business, because he had a fruit company. It is claimed that the Armour Company is not interested in the marketing of fruit, and yet there is the strongest circumstantial evidence in the world that it is interested. Now, suppose they should get a renewal of the contracts, is there any law against a man selling his stock which he may hold in a corporation? Is there any law against a party buying it, and might it not be an easy thing for them to come into possession of the stock of the Earl Fruit Company? I believe that every person who invests capital in any interest should be entitled to a fair compensation, that is, if the interest is legitimate. But I want them to permit the growers to also receive a reasonable interest upon the capital that they have invested in agricultural interests in this State. You may take a car; they claim now that the cost is $1,000, though possibly about $800. What is a fair interest on $800. Allow them ten per cent, and what have you got? It is $80 for the year. But that is nothing in comparison with what they make. In talking with a refrigerator car man the other day, I said the growers should be allowed to make a fair interest on capital invested and the labor. "No, sir," said he, "they ought not consider interest on the capital invested." He said that was invested in real estate, and they ought not to consider that they were entitled to interest on capital invested in that way. He said the car was a perishable article. I would like to see the growers and the refrigerator car lines go into partnership to this degree, that each should be allowed the same per cent or interest on the capital invested. If you would allow the growers in California to receive an equal per cent for the capital invested I think they would be perfectly satisfied to maintain rates as they are now, because their income would be pretty good. I feel that that proposition would be rejected, because they have a good thing and would not enter into such an agreement with the growers. They say arbitrarily that they must have so much, and that is all there is about it. The fruit-growers are to a great degree masters of the situation, however, if they only knew it. You will see from the memorial which was presented to the railroads, and which comprises but a limited part of the correspondence that took place between the officials of the railroads and your committee, that they realize that the growers of California are a unit, and this is the first time they ever recognized that thing. Prior to this time the committee had appeared before the officials in a body and said, "We want a reduction," etc., and the officials said, "We will take it under advisement," and that was generally the end of it. But in this case the committee constantly and continually, without an intermission of six days, endeavored to support the resolution passed by this Convention one year ago in the advocacy of the reduction of time. The railroads at last seemed to realize that the fruit-growers were organized and were getting to be an important factor. Then they were willing to grant our request, as was expressed in a letter from Mr. Sproule on the 21st of May last, and we will derive a benefit from the reduction that was made. We not only want the time that was given by the road, but that they comply with their contract made on the 21st day of May, 1901. If they will carry that out you will find in your returns that you will get better prices and greater profits, that it will broaden the markets, and that our fruit will be distributed to better advantage.

I move that this report be received and placed on file, and that the sentiments therein expressed be adopted by this Convention.

Motion carried.

MR. A. N. JUDD. I went up to Washington and Oregon to study the fruit business, as I am engaged in it at Watsonville. I found that every point where a car or two of fruit were to be shipped was a terminal point, and at points where they were paying 60 to 75 cents a hundred on apples, I found that we were paying $1.05. Refrigeration charges, instead of being $35, were $10 to $17.50, and no extra charge for icing en route. They shipped 30,000 chests of strawberries last year from the Hood River, and are planting trees in that section to increase their orchard areas 300 to 500 per cent. Their prunes were selling readily at 4, 5, 6, and 7 cents. One grower, when he learned I came from California, chuckled at the differences among the Santa Clara growers, and remarked, "You are making a market for our prunes right along. You are simply holding an umbrella over our heads. We will get all the benefits if you keep quarreling among yourselves." The State Horticultural Commissions of both Washington and Oregon are well supplied with money, and in the essentials of successful fruit-growing are far ahead of us. They are shipping apples to-day to Manila, Hongkong, and Vladivostok, and have two or three agents in several of the Trans-Pacific countries constantly making markets. Before long we will be up against a hard proposition in this matter of rates. I move you, sir, that the same Committee on Transportation be appointed for next year, that they shall report at the next annual convention, and that their investigations shall cover these matters of difference in the rates in California with those of Oregon and Washington, and all other things necessary to give the fruit-growers of California a clear idea on those matters.

Motion carried.

On motion of W. H. AIKEN, the Committee on Transportation was made perpetual, and those who will compose it were left to the choice of the Chairman, who selected R. D. Stephens of Sacramento, Alden Anderson of Suisun, A. H. Naftzger of Los Angeles, and A. N. Judd of Watsonville. The fifth member is to be appointed later.

The Convention then adjourned until 1:30 o'clock P. M.

AFTERNOON SESSION—FOURTH DAY.

FRIDAY, December 6, 1901.

The Convention met, as per adjournment, at 1:30 o'clock P. M. President COOPER in the chair.

FOOD ADULTERATION.

BY PROF. M. E. JAFFA, OF THE UNIVERSITY OF CALIFORNIA.

The subject of this afternoon's discussion is one that should be interesting to all people, not only from the purely educational standpoint, but on account of its practical application to our every-day life. We are all more or less affected by food adulterations, and, whether we know it or not, are to a greater or less degree the victims of fraudulent practices. There have been efforts made by the governments of all countries to limit, if not to wholly eradicate, this evil. But until the people themselves really desire and demand pure food, the government alone can do comparatively little. Laws may be enacted, but they will not be enforced, unless there is some degree of interest taken in them by the people at large. Food laboratories may be established as they are at present, and experts paid to examine foods, but ninety per cent of the people will go on in the same old way, utterly regardless of the investigations, continuing to buy articles condemned by these experts, when a better and purer substance may perhaps be had at the same dealers for the same price. And it is partly with the object of making a plea for the establishment and maintenance of well-equipped food laboratories and for their hearty support by the public that this paper is presented here to-day. The question of food upon which we all depend for our lives, to say nothing of our health and strength, is too important a matter for any one to neglect. And every good citizen should acquaint himself, as fully as possible, with this subject, so as to assist, so far as lies in his power, in the passage of such laws as will insure the utmost honesty in the handling of our foods.

The adulteration of foods is not of modern origin. We have evidence of such practices among the ancient Greeks and Romans. In Rome, bread was sometimes made from flour mixed with a white earth. The adulteration of wine in Athens necessitated the appointment of a special inspector, whose duty it was to detect and stop these sophistications. Greek history has handed down the name of Canthare, who excelled in ingenious mixtures, and knew how to impart the flavors of age and maturity to new wines. His ingenuity was such, that it was commemorated in the proverb, "Artificial as Canthare."

In Rome, also, wine was much tampered with; even the rich, according to Pliny, could not obtain the natural wines of Palermo, for they were adulterated in the cellars; and certain wines from Gaul had an artificial color given them by means of aloes and other drugs. That kind of wine is still a popular drink in some parts of Spain—as Valencia.

In England and in Europe generally from the eleventh century onwards, the different tradespeople, particularly, bakers, brewers, and dealers in spices, were accused of corrupt practices.

In England and France the first laws regulating the sale of bread were passed at the beginning of the thirteenth century. The original object was to regulate the price of bread by limiting the profit of the baker on each cental of wheat, so that the price of each loaf should bear a certain proportion to the price of the cental of wheat. There were various modifications of these assays, and they were finally abolished in 1815. In 1266 a law was in force forbidding the sale of unwholesome meat and wine. This law remained active until the middle of the seventeenth century.

In the sixteenth century *ale-tasters* were appointed, whose duty it was to "try, taste, and assize" all beer before it was sold. They had one very peculiar and crude method of testing for adulteration with sugar, which was probably more convincing to the laity than our present more scientific laboratory methods. The ale-taster poured some of the ale upon a wooden bench, and then sat down upon the spot, attired in leathern breeches; if he, later, experienced any difficulty in rising from the bench the ale was pronounced "adulterated," but if the dried extract had no adhesive property, and rising was easy, the ale was pronounced "pure."

Cases of dishonest tampering with food were severely dealt with in England during the middle ages, the offenders being subjected to corporal punishment and exposure in the pillory.

In Germany there were many regulations in regard to bread, wine, beer, and drugs. There is a case on record of a dealer in Biebrich who was convicted of selling adulterated wine. He was sentenced to drink six quarts of his own mixture. He did so, and died from the effects.

Up to the middle of the present century but little progress was made in reducing the extent of adulterations, the practice increasing rather than decreasing. The establishment, however, of the Lancet's Analytical Sanitary Commission in 1850, with Dr. Arthur Hill as analyst, and Dr. Hassall as leading spirit, marks a new and most important era in this work. This commission was the first to undertake any systematic investigations along this line; but this example was soon followed by other countries.

The Analytical Sanitary Commission was commenced in the first number of the Lancet in 1851, in which the editor states: "We propose, for the public benefit, to institute an extensive and somewhat rigorous series of investigations into the present conditions of the various articles of diet supplied to the inhabitants of this great metropolis and vicinity. * * * Special features of the inquiry will be that they are all based upon actual inquiry and experiment. The microscope and test-tube will be our constant companions."

This was the first instance of any extensive application of quantitative analysis and of the microscope to the examination of foods. The work of the commission was carried on for four years, and was productive of excellent results—one of which was the appointment of "The Select Committee on the Adulterations of Foods," which is still in existence; another, the passage of the first general act in 1860, which was followed by many others, the last being enacted in 1887.

Actually the work of the commission met with opposition in every form, particularly from dealers and manufacturers. Even in Parliament, Sir Charles Wood, Chancellor of the Exchequer, quoted as opinion of the "most distinguished chemist of the day" the assertion that "neither by chemistry nor by any other means could chicory be detected in a mixture of that substance with coffee." With the aid of the microscope Dr. Hassall proved this assertion to be false.

The English law on this subject has exerted a powerful and wide influence. In framing all subsequent laws in other countries the English law has been carefully studied, and the experience gained in thirty years' contest between friends and foes of pure-food legislation has saved lots of time and misspent effort. It might well be asked why, after all these years of recognition of this evil, have we not done more toward overcoming or regulating it? But, as Hon. Marriot Brosius of Pennsylvania says: "We are a peculiar people—man is not only a bundle of habits, but the parts of his character are in a state of chronic war with each other."

Is it any wonder that no one has been able to find a suitable definition for him. Bryant says, "Some define man as a talking animal, overlooking poor Poll. Some have defined him as a laughing animal, forgetting the laughing hyena; others as the animal that cooks food, not thinking of the traditional monkey that used a cat's paw to pull the chestnuts out of the fire. Seeking thoughtfully for a definition drawn from a wide generalization, I have come," he says, "to the deliberate conclusion that the only definition which sufficiently determines and distinguishes man from all known animals is this, 'man is an animal that *adulterates* and sometimes *poisons* his own food and drink.'"

Let us see how he does this. There are two different methods employed. First, the harmful and sometimes poisonous to the human system; and second, the deceptive and fraudulent, but not injurious to the health of the consumer.

The first class is the more important for us to consider. The materials used as adulterants act as preservatives or antiseptics. These are added to the foods or food products for the purpose of killing germ life or arresting and inhibiting fermentation. Those that are more commonly used are: Salicylic acid; boracic acid, or borax; sulphurous acid; formalin.

Before discussing these compounds in their relation to food, it seems pertinent to inquire into their effect on digestion.

Digestion, whether it be salivary, gastric, or pancreatic, is a process of fermentation due to the soluble enzymes present in the different liquids; consequently, any compound that will prevent fermentation will hinder digestion. All chemical agents which precipitate pepsin arrest digestion, and generally the salts of the heavy metals exert this action, as lead acetate, copper sulphate, mercuric chloride, alum, etc. Neutral salts of the alkalies and alkaline works, as $NaCl$, Na_2SO_4, $MgSO_4$, and Kl, hinder peptic digestion. Sulphurous acid arrests it. Dr. Allan states: "The changes by which native proteids are split up, with successive formation of soluble and diffusible products, commence in the stomach, continue in the duodenum, and are completed in the small intestine." These changes are apt to be retarded or entirely prevented by the presence of certain drugs and other foreign matter, such as coloring matter and antiseptics or food preservatives. Hence, the influence of such bodies in the processes of digestion and assimilation is a matter of considerable practical importance. When present in excessive quantity such additions can hardly fail to retard and interfere with digestive action; but the effect of the small proportions generally employed is less certain, and very little authentic information exists on the subject. But we must never forget that there is the accumulative action of drugs when very small quantities are employed for a long time.

The Select Committee on Food Adulteration, which sat during the sessions of 1894, '95, and '96, reported that in their opinion the use of antiseptics in food is one which deserves further investigation, by recognized scientific authorities, with a view to an expression of an opinion that would be regarded as authoritative. The editor of the Lancet accordingly addressed letters to various leading members of the medical profession, asking the following questions:

First—Is the presence of salicylic, boracic, or benzoic acid or of formalin in food, in quantities sufficient to preserve it, injurious to health?

Second—Should the use of antiseptics for this purpose be forbidden by law altogether?

Third—Should legislation be brought to bear on the restriction of the amount?

Fourth—Should the law insist that when preservatives are used the fact should be stated on the labels?

The answers to the above questions were published in the Lancet for 1897, page 56, *et seq*.

Sir Henry Thompson holds that the addition of antiseptics was undesirable, though unable to produce evidence that any of them had given rise to deleterious action; owing to the impossibility of isolating the precise influence of the drug. He objects strongly to the dietetic use of drugs, and is of the opinion that the name and quantity of the antiseptic employed should be on the label, etc.

Dr. Pavy does not consider our knowledge sufficiently extended to permit of its being taken for granted that no injury is producible, though there is no evidence of injury to health. He points out that it is the vendor and not the consumer who is benefited. He considers that notification of the fact of antiseptics being employed and their nature and amount would be sufficient. With the public interest thus safeguarded he thinks that advantage might be taken of the power of antiseptics in preserving articles of food.

Dr. F. J. Allan points out the possibility of daily accumulation of antiseptics quite sufficient to produce a gradual lowering of the standard of health; and is of the opinion that the fact of an antiseptic being added, and its nature, should be required, by law, to be announced at the time of sale.

Dr. Sims Woodhead draws attention to the idiosyncrasy and cumulative effect, and dwells upon our ignorance of the action of certain drugs (formalin) on foodstuffs. He points out that by the use of preservatives foods of inferior quality may be doctored. He would make the use of antiseptics illegal, unless their nature and quantity be made known.

Dr. T. L. Brunton writes that we must remember that poisons are formed in food by spontaneous decomposition, which may take place after purchase. The question to be decided comes to be whether antiseptics are likely to be more injurious to health than the natural products of decomposition. (I do not consider this point well taken. There should be no necessity of choosing between antiseptics and food poisons. Our food should be fresh and in such good condition that there should be no opportunity for spontaneous decomposition.) His own belief is that preservatives are less injurious, and the answers are: 1. The use of antiseptics should not be forbidden by law; 2. It is doubtful whether legislation should restrict the amount, as manufacturers will probably use the minimum amount found sufficient; 3. The fact of preservatives being used and their amount should be stated on the label.

Dr. J. B. Bradbury thinks that it is not necessary to forbid the use of antiseptics, but that either the amount should be restricted, or the fact of their addition stated on the label.

Dr. Whitlegge can not speak positively, though it is clear to him that the law should insist on a plain statement on the label if any preservative was added.

The late Sir B. W. Richardson considered that antiseptics are not only necessary at this moment, but when used in proper form and quantity cause no injury whatever (a very bold statement). There ought to be a license given permitting a certain fixed and not dangerous quantity of antiseptics, and it ought to be stated on the label what the antiseptic is and its quantity.

Dr. Chittendon has shown that permanganate of potash, borax, alum, sodium salicylate, quinine, and salts of alkaloids act antagonistically to peptic digestion.

In the light of the above evidence from such distinguished men, is it any wonder that the layman is puzzled? Should we blame or consider the manufacturer so reprehensible if he used or advocates the use of antiseptics?

The keynote of the foregoing is: that we know very little of the use of these preservative agents, and that physiological investigations are urgently called for. But in view of our insufficient knowledge, and until we do have authentic data, would it not be more advisable and erring on the safe side to prohibit the use of such drugs?

Professor Hilgard states, "There is far too much at stake not to deserve the utmost conservatism and distrust of departure from what for thousands of years has, by the universal consensus of opinion, been proved to be a safe criterion of the healthfulness of food: *to permit in it nothing that is not naturally an ingredient either of food itself or of the human body.*"

I devote considerable time to the antiseptics, not because adulteration by these is the most extensive—quite the reverse—(only about ten per cent of the total sophistication is due to treatment with these chemicals), but because they are of more vital interest, as they are generally present in foods used by persons of weak digestion or by invalids whose digestive systems are over-sensitive, and therefore more readily acted on by drugs. Doctors often recommend for very young children and invalids "unfermented grape juice." Several brands are on the market in California and in the East, each and all claiming to be absolutely pure and free from antiseptics. With one or two exceptions they have, upon examination, showed the presence of notable quantities of salicylic acid. Some of these samples have been procured from "pure-food exhibits."

Salicylic acid is often found in wine, and when you find a bottle of white wine or claret that, after being opened, will not "sour" upon standing for a few days, you can rest assured that either salicylic acid or some other preservative has been added. Jellies, preserves, and canned goods are adulterated in some instances with this chemical, thus preventing mould or fermentation. Vendors have sold, and are probably now selling, to rural housekeepers tablets under the name of "Extract of Salyx," "Preservaline," etc. These have, upon analysis, proved to be salicylic acid with some harmless filler. Now there is no doubt whatever that they will do the promised work, but if persons wish to use such a preservative it is far cheaper to buy from a druggist salicylic acid at $2 a pound than to buy the tablets or lozenges at the rate of $16 per pound.

Another compound, called "Preservitos," has been examined by the Cornell Station—a white powder dissolving readily in water. The directions are: "Add ½ to 1 oz. of preservitos to each gallon of cream, according to length of time it is desired to keep fresh. The smaller proportion will keep cream sweet and with full flavor for a fortnight, and the larger proportion for a month, if the cream is quite fresh at the time of addition. It is advisable to make a paste of the preservitos with a little cream, and then add the paste to the bulk of the cream." Analysis showed: 30 per cent borax and small proportion of salicylic acid, and 60 per cent sugar. 1 oz. = 1750 grains = 600 grains borax, *without* the salicylic acid. This must have a decidedly injurious action on digestion.

Two or three pamphlets lately published in the interest of the borax industry contain results of many experiments in digestion, some *artificial*, some on dogs as subjects. In case of the artificial experiments, it appears that borax is not a hindrance, but a help to the digestion of albuminoids. But it does, even in small doses, interfere with amylolytic fermentation, much of which takes place in the small intestine. And even if digestion in the case of the dog was not embarrassed by the addition of borax, it does not follow that in the human system like conditions would obtain—our food containing much starch, that of the dog practically none.

The practice of sulphuring fruits just previous to drying is carried on to almost an alarming extent. A slight sulphuring of the fruit would in all probability not be injurious. But the heavy sulphuring, one might say, heroic treatment, that is meted out to the dried fruits in some parts of the State can only result deleteriously to the fruit and tend to injure the health of the consumer. In Germany two years ago consignments of dried apricots were subjected to analysis and found to contain a notable percentage of sulphur compounds. The sale of such fruits is, in Germany, in direct violation of the law. The attention of

American shippers was called to this condition of affairs and to the absolute necessity of abstaining from the use of sulphur. Persistence in this practice will undoubtedly result in the entire exclusion of such fruits from Germany. Probably, though, in this country, the practice will not decrease while the demand for "the finest appearing" fruit exceeds that for the more wholesome. But while the bleaching of thoroughly ripe fruit is to be deprecated in the strongest terms, still such methods sink into insignificance when compared to those adopted by unscrupulous persons who sulphur, and heavily too, *unripe*, immature apples and pears so as to render them, under our present system, marketable. Desiccated vegetables have been bleached to such an extent that acid can be tasted when the material is moistened.

One of the most efficacious food preservatives is formalin (H_2CO) or formaldehyde, discovered in 1867 by Von Hoffman. Its antiseptic properties were not discovered until 1888–1890. This agent is more effective than boracic acid, borax, salicylic or benzoic acids. It is a germicide, preventing putrefaction, and kills all ferments. One tablespoonful to one quart equals one per cent solution. As further evidence of the power of this agent, it might be said that "the behavior," in the Babcock test, of milk which had been preserved by formalin, shows that its composition is in some way affected. Ordinarily, the curd of milk is dissolved by the sulphuric acid that is used in the test. Where formalin is present the curd often fails to dissolve, and becomes a compact mass. If the preservative can so alter milk that H_2SO_4 may fail to dissolve the curd, it is not the least likely that the action of the digestive juices may be rendered less effective. Formalin itself is volatile, and hence some say that if the foods preserved with this antiseptic are cooked formalin will be volatilized. True enough; but what about the ingredients that have been acted on? It is claimed that even gelatin exposed to formalin vapors is rendered insoluble, even in hot water or in alkaline solutions.

If, however, in the light of the facts just set forth, a person should wish to preserve foods by means of formalin, he should buy it as such, for about sixty cents per pound, and not purchase a solution called callerine. This preparation, put up in Philadelphia, was put on the market with labels setting forth its properties, which were identical with those attributed to formalin. Among the directions were: For milk, one ounce (two tablespoons) callerine to fourteen gallons of milk, will keep it at a temperature of 75° F.; for longer period, use more callerine. A solution of two ounces of callerine to one quart of water will be an efficient wash for preserving meat, poultry, game, fish, vegetables, etc. Price, $6 per gallon, or $1.25 per pound for a working sample.

Upon examination at the Cornell station this material proved to be a seven per cent solution of formalin.

1 gal. Formalin, weight 9 lbs., at 60 cents	$5 40
$5\frac{5}{7}$ gals. Callerine (equal to 1 gal. Formalin)	34 28
	$28 88

1 lb. Formalin	$0 60
$5\frac{5}{7}$ lbs. Callerine (equal to 1 lb. Formalin)	7 14
	$6 54

The above figures show the profit made by vendors of this preparation.

One of the most salient objections to the use of nearly all of these antiseptics can be formulated on the ground that their presence in any food or food products can not be directly detected by the consumer, but only by means of expert chemical analysis. A constant use, however, would undoubtedly manifest itself by derangement of some part of the digestive system.

THE SECOND CLASS OF ADULTERANTS, OR DECEPTIVES, comprises between eighty and ninety per cent of the total food adulterations. On the border line between the two kinds are perhaps the *Baking Powders*. Three different kinds are recognized:

1. Tartrate powders, in which the acid constituent is tartaric acid in some form.
2. Phosphate powders, in which the acid is phosphoric acid.
3. Alum powders, in which the acid is sulphuric acid contained in some form of alum salt.

The alum powders would seem, according to the latest data, to belong in our first class of adulterants, as will be seen by the words of Professor Prescott: "Alum acts on the mucous membrane as an irritative astringent. It lessens the digestibility of albuminous foods. In medicine it is used with caution, locally and not continuously. In food it should never be used. Mixed with carbonated alkalies in baking powders, the resulting hydrate of aluminium is in part soluble in the acidulous liquid needful to digestion when the effects of alum are obtained. Besides, it is unsafe to depend upon the completed action of the soda and its exact chemical proportions in the baking powder. There should be just sufficient so that the whole of the aluminium be converted to a hydrate, and any excess of the soda is detrimental. The use of alum has always been forbidden. It would be proper that its use in baking powder should be prohibited by law, as is the case in England and France."

The continued consumption, however, of any of the baking powders would overload the system with mineral matter.

If the tartrate powders are mixed with flour or starch as fillers they come under the head of deceptives, as tartrate powders rationally used are not supposed to be injurious to the health of the average man.

The *jellies* are good examples of deceptives. For instance, if currant jelly is mixed with apple, a fraud is perpetrated on the consumer. But as far as health is concerned one is as nourishing as the other, and the compound far from injurious. When, however, gelatin, starch, etc., are added, then it is a pecuniary cheat, for we do not obtain the amount of nutriment paid for.

Honey is one of the products very often found impure in the market, especially in the liquid state. Liquid glucose has been in many cases mixed with honey. It is the very thing to add, and if pure is so harmless that it is no wonder that it is the main sophistication. Chemists can much easier detect that than the addition of inverted sugar. The same result is obtained whether the bees are fed inverted cane sugar or whether the bees eat cane sugar and invert it themselves.

Condiments are probably the most generally adulterated of all food products. About fifty per cent are found impure in the market, the materials used being wheat flour and wheat products, sand, brick dust, cocoanut shells, almond shells, rice, middlings, etc. These materials, with the exception of sand and brick dust, are perfectly harmless, but the incorporation of them into spices is a fraud.

Coffee adulterants consist of preparations of wheat, rye, barley, peas, chicory, etc. Sometimes artificial beans are manufactured from green clay and some genuine coffee. These beans, on being heated, assume the tint of real coffee beans, because the green clay absorbs the coloring matter of the genuine coffee, thus imparting to the whole a normal tint.

Tea. In 1887 Dr. Spencer, after examining sixty-three samples of tea purchased in Washington, D. C., arrived at the conclusion that there are few if any spurious teas on the market. The main adulteration practiced in the case of tea is "facing," that is, coloring the leaves which for some reason or other have been damaged in manufacture or otherwise, to improve their appearance. The Chinese and Japanese do not face the teas they consume at home; only those intended for export are so treated. Materials employed are Prussian blue, turmeric, indigo, and plumbago. Prussian blue is insoluble in water or alcohol—it is deemed a tonic febrifuge, etc., but at present rarely used. The dose is from two tenths to three tenths of a gram per day. One would have to consume a pound of tea to absorb that much Prussian blue. Similarly regarding the adulterants mentioned above. "Spent" tea is a form which one sometimes finds in the market. It is nothing more or less than tea which has been once used, dried and repacked.

Salad Oils, which should consist entirely of olive oil, are largely adulterated, chiefly with cottonseed, mustard, and sunflower oils, and to a less extent with several others, such as lard, rapeseed, maize or corn, poppyseed, etc. Sunflower oil makes an excellent salad dressing, and hygienically is perhaps as good as olive oil; but the fraud consists in selling the sunflower or cottonseed oil at the same price as olive oil. It is claimed that cottonseed oil clogs the system.

Flours. Very little, if any, of the white flours of the Pacific Coast are spurious. Not so in the East, however, where corn products are employed as fillers, and in the old country clay and gypsum.

Gluten flour is a material which, while not adulterated, is not always what the label represents it to be. This meal is recommended by physicians for individuals suffering from diabetes, on the supposition that such flour will contain the minimum amount of starch. Many samples have been analyzed by our Station, with the result that very few are entitled to the name gluten flour. The majority of the specimens examined rated in starch content but little below that of a first-class whole-wheat meal; the cost, however, ranged much higher. Here we have a double fraud. In the first place, the patient is consuming a greater proportion of starch than is advisable; and secondly, the outlay is from three to five times what it should be. If a person asks for a forty per cent gluten flour and receives an article only yielding fifteen per cent, the deception is apparent. Then again, when a gluten flour is desired, perhaps a large percentage of bran is obtained. We have another case of imposition, and a good illustration of the fact that chemical analysis alone is not a sufficient guide to the physiological or nutritive value of a food. The digestive coefficient of the protein or albuminoids in a gluten flour is far higher than that for a meal, showing a high percentage of bran, although the percentage of protein in both cases may be identical.

Butter. From the first day of January, 1894, to March, 1895, 450,000 pounds of oleomargarine were sold in this State; of this, 300,000 pounds were manufactured in the State and 150,000 pounds imported. The unlimited sale of the oleomargarine resulted in a loss to the dairy industry of over $100,000. Since the passage of the law in 1895 for the prevention of deception in the manufacture and sale of butter and cheese, very little has been sold. Oleo is the chief ingredient in spurious butter, and the presence is easily ascertained by the expert chemist. Owing to this fact, and the expense attending the establishing of a plant for the manufacture of oleo, but little of this imitation butter is found on the market. (Oleo is sterilized fat from the beef, strained and pressed, stearine remaining behind; and the liquid = oleo neutral oil made from lard as above, except that no stearine is extracted.)

The nutritive value of good oleomargarine is fully equal to that of good butter, and without doubt will keep fresh for a much longer time.

In cases of a delicate stomach the advantage, however, will be on the side of butter.

Butter-increasers are the names given to several compounds sold throughout the East, but not to any extent in California. Chase's Butter-Increaser is a solution which, according to the label, is capable of doubling the yield of butter from cream, if added in small proportions to the cream before churning. It is a twenty-five per cent solution of acetic acid and small amount of salicylic acid. The acetic acid curdled the casein and incorporated it in the fat, thus doubling the weight of the product, which was not a good butter nor even a poor cheese.

Another nostrum is a powder called "Gilt Edge Butter Compound." It guarantees to make two pounds of butter from one pound of butter and a quart of sweet milk. Directions: Warm the butter until soft; mix in the milk, and add as much of the compound as could be placed on a one-cent piece. The resulting butter (?) will weigh two pounds. The compound is alum and soda and a little pink coloring-matter. Same action as that of Chase's Butter-Increaser.

Cheese. Previous to the passage of the cheese law in 1897, the honest cheese-manufacturer had no redress against the dishonest. Now it is entirely different. Both the consumer and the seller are better protected. Each cheese must be branded as to its kind, whether full-cream, half-skim, or skim-milk cheese. Very little filled cheese is to-day to be found in the market, for reasons similar to those stated for butter.

Filled cheese is cheese in which the fat is oleo or neutral oil, and not butter fat. Skim milk and oleo are the materials from which is produced filled cheese. This product is put up in exceedingly neat packages, presenting a very attractive appearance. It is more homogeneous as a rule than cream cheese, will keep for a longer period of time in better condition, and little can be said against its nutritive properties. At the same time it is a rank fraud, if sold under any other label.

An exemplification of a gross imposition is shown in the substitution, by some candy-manufacturers, of apricot kernels for almonds.

Many more examples of deceptives might be cited to show how much such sophistication is in existence, but for such a discussion the foregoing is amply sufficient.

Another form of deception is noted with reference to some of the proprietary foods—not in the foods themselves, but in the labels. These convey to the mind of the laity, in many instances, decidedly wrong impressions. Just one illustration: "Grape-Nuts." This food is made by special treatment of entire wheat and barley, and has nearly the same proximate composition as the wheat foods. Part of the starch has been changed into dextrine and grape sugar. The claims of the makers are preposterous: "Grape-nuts are a condensed food." "Four heaping teaspoonfuls are sufficient for the average meal." "The system will absorb a greater amount of nourishment from one pound of grape-nuts than from ten pounds of meat, wheat, oats, or bread." A man at moderate work needs per day about .28 of a pound (4½ ounces) of protein, and sufficient fats and carbohydrates to make the potential energy 3,500 calories. Four heaping teaspoonfuls of grape-nuts weigh one ounce. The protein and energy needed for one meal (one third of one day) and that furnished by four heaping teaspoonfuls of grape-nuts are compared in the following table:

	Protein. (lbs.)	Fuel Value. (calories)
Needed for one third day by man at moderate work	.090	1,175
Furnished by 4 heaping teaspoonfuls (1 oz. grape-nuts)	.007	117

It would require .77 of a pound of grape-nuts (three fourths of a package) to furnish one third of the protein needed for one day, and the energy needed would be afforded by .63 of a pound.

The nutrients of beef are usually more completely digested and absorbed than those of vegetable foods. There is no reason for thinking that grape-nuts would be more completely digested than rolled oats, wheat flour, or wheat bread.

In the following table there are compared the pounds of protein and fuel values of one pound of grape-nuts, with ten pounds of meat, wheat, oats, or bread:

	Protein. (lbs.)	Fuel Value. (calories)
1 pound grape-nuts	.12	1,870
10 pounds round steak and bone	1.90	8,950
10 pounds beef rump and bone	1.29	14,050
10 pounds rolled wheat	1.30	17,650
10 pounds flour, white	1.01	16,450
10 pounds rolled oats	1.50	19,650
10 pounds white bread	.80	12,200

While there is no question that grape-nuts is a good cereal food, it is difficult to understand why the manufacturers should make claims so absurd and contrary to fact.

And now for just one moment let us consider why all this goes on. We have laws against these practices. In our own country nearly all the States and Territories have laws on this subject, but they are not rigidly enforced. Determined efforts have been and are being made to secure a national food law, and it is to be hoped that we shall not have many years to wait for it. But the mere passage of the law will not accomplish the work. We must grow up to the law as individuals and as a people. Law alone will not effect it. Pure-food conventions alone will not do so, nor will pure-food exhibits. All these help, but they accomplish but little, so long as the more enlightened and better class of people do not take an active part or display sufficient interest in public affairs, and so long as the municipal offices are in control of men mentally or morally unfit to assume the responsibility. *When* the public is properly educated on the subject, and people begin to desire pure food furnished to them in its best form, *then* will food laboratories be established and properly maintained; *then* will food laws be strictly enforced and food adulteration become a practice of the past.

Upon motion, the paper by Professor Jaffa was received and placed on file.

SELECTION OF THE NEXT MEETING-PLACE OF THE CONVENTION.

The following places were placed in nomination: Oroville, Butte County; Hanford, Kings County, and Los Angeles; resulting in Hanford receiving nine votes, Oroville three, and Los Angeles seven.

The Chair then called for a vote from those who wished to leave the matter of selecting a place to the State Board entirely, and suggesting the city of San Francisco, and seventeen votes were cast.

Upon motion of W. H. Aiken, the matter of selecting the next meeting-place was left with the State Board of Horticulture.

The following were appointed a committee to judge the fruits exhibited before the Convention, and were ordered to report to the Secretary of the State Board of Horticulture: Edward Berwick, Edward Ehrhorn, and Professor George Hussmann.

Edward Berwick, E. F. Adams, and B. N. Rowley were appointed a Committee on the Nicaragua Canal.

BIRDS IN THEIR RELATION TO AGRICULTURE AND HORTICULTURE.

By W. OTTO EMERSON, of Haywards.

The beneficial relations of birds to agriculture and horticulture are of untold value, not easily expressed by figures of speech. We find in this age of rapid advancement in the modes of producing the best results from the soil, that man strives in every way to protect his holdings. This is as it should be, and shows his desire for increased knowledge and his elevation to a higher plane in this world's affairs.

After years of careful research, it has been proven that bird life has certain functions to perform in guarding the food-supply of the earth, just as the hills carry the falling rain down to the lower levels, and as the grass-blades and leaves protect the seeds, blossoms, and fruits against damage.

If it were not for our feathered tenants about us, our existence would be only for a few short months of hard battling against the hordes of insect pests.

We have two great classes of the Avis family—water and land birds. The former I shall not refer to at present, as they do not especially interest the farmer or fruit-grower; but as to the latter class, we will see what part they play in the conditions of our existence.

We can divide the land birds into many groups, such as carnivorous, insectivorous or partly so, and granivorous, wholly or in part. It is only within the last ten or twelve years that any attention has been given to the investigation of bird foods at the hands of ornithologists, particularly those connected with the Department of Agriculture.

One of these groups of birds that should have more care given them are the raptores, or birds of prey. Of the hawks and owls, of which we have some ninety varieties distributed over the United States, we find seventeen of the hawks throughout our State, besides ten varieties of owls. Of the hawks, only two species have proven harmful to the farmer's interest. These are commonly known by the name of Cooper's and Sharp-shinned hawks, both feeding on small birds and game.

Cooper's hawk is of a dark brown color, excepting under-parts of body, which are white, having markings of brown in long dashes; eyes and legs, yellow; tail having broad bars or bands of grayish white; both sexes being similar; length of bird, 16 inches.

The sharp-shinned hawk is of a reddish-brown or slate color on the back and wings; breast of light-reddish color, barred across with markings of the same color, but darker. Tail, banded; eyes and legs, yellow; legs slender and very long; length of bird, 10 inches.

In referring to Bulletin No. 3 on Hawks and Owls, by Dr. A. K. Fisher, U. S. Department of Agriculture, we find that out of 2,212 stomachs examined, only 3½ per cent contained poultry and game, while 56 per cent had mice and other mammals, and 27 per cent showed that the food consisted of insects. In these analyses of the stomachs of hawks and owls it will be seen that a large number of rodents are destroyed, resulting in the farmer's welfare.

One of our most common raptores, known as hen-hawk, and at whose door is laid all the charges of chicken-stealing, is the Western red-tailed hawk (*Buteo borealis*). It can be seen almost any day the year round circling over the hills and valleys, or on watch for some unguarded squirrel, of which they are great hunters. Mice and grasshoppers make up much of their diet, the birds' crops being often packed with them. A specimen which I shot in February contained five mice. This species of hawk has two plumages: Adult, dark brown over back; wings and tail barred with same; under-parts and the entire breast a rufous-brown, spotted with a darker shade of the same color.

The young of the year are without any of the rufous under-parts, and are dashed only with dark brown.

In some States bounty laws have been passed for the scalps of hawks and owls. Pennsylvania, in 1885, passed such an act, which cost her in just nine months the sum of $90,000. Now compare this with the aggregate amount of damage done to crops by rodents and insects in that same State annually, which is about $5,000,000. This may seem a large sum, but is only a drop to what other States have suffered, such as Illinois, which lost $73,000,000 in 1864 by the ravages of the chinch-bug. Missouri, by the same bug, in 1874, lost $19,000,000.

Other useful hawks we have in our State are Swainson's, the red-bellied, and the little falcon, known as the desert sparrowhawk. This latter species is often blamed for the depredations of the sharp-skinned hawk. The sparrowhawk feeds entirely on insects, such as beetles, grasshoppers, mole crickets, field mice, and lizards. Its favorite lookout is from any fence-post or a cross bar of a telegraph pole. They can be easily recognized from other small hawks by (male) dark, slate-colored wings, a hood of the same color, with a crown of chestnut-red; the whole back barred with black; breast, reddish-white, striped or spotted with black; tail barred with same colors. The female is chestnut-brown on back and wings, lighter on breast, barred with a darker color; tail, the same. Both sexes have white cheeks and a black mark running down from the front and back of the eye. Legs, yellow.

A few words as to the benefits derived from the owls (*Strigidæ*) by the farmer and orchardist. The barn owl takes precedence, as being most beneficial about the orchard, field, or farm buildings. They will destroy more rodents in one night's hunt than a dozen cats; six mice and two or three gophers being a small bag for one owl and its brood. Gophers go largely to make up their diet, and it is not uncommon to find five or six in their nesting or roosting places in hollow tree limbs or even in holes in steep banks. The general color of the barn owl is ocherous-yellow, more or less speckled or marbled with black. The eyes are black, and the feet are feathered to the toes.

One of the smaller, cat-like owls, known as the California screech owl, of mottled gray and black, spends much of its time among the orchard trees and stubs catching great numbers of small mammals, crickets, beetles, and other insects. Out of 255 stomachs examined of this little *Scops*, 91 contained mice, 100 had insects, and 43 were empty, showing the amount of good they do among our trees.

Other species of owls beneficial are the burrowing owl, short-eared and long-eared owls. The former is seen about the holes of squirrels, and has the odd habit of trying to screw its head off if you pass around it. This owl occupies an important place on the farm in keeping down small rodents. The short-eared and long-eared owls are great mousers, as also is the great horned owl, which will, when chance comes its way, take a roosting chicken out of the trees or bushes.

The farmer and fruit-grower have not, as a rule, given the proper attention to the observation of birds' habits, nor have they had access to convenient information; but happily the times are changing, so that our State agricultural stations are issuing important bulletins from time to time.

Of the many other birds that are related to the farmer may be mentioned the meadowlarks and blackbirds, to which I will call your attention at another time.

What orchardist in this Convention has taken the time to spend an hour, much less a day, among the birds of his orchard? Or did you ever try to count all the birds seen, or ascertain the number of times a parent bird carried insects to the gaping mouths of its young? These seemingly small facts play a more important part in the life of our trees than can be told in words. Take our little red-capped chipping sparrow, which builds its nest in your apple or pear tree; the parent birds will make from fourteen to twenty feeding trips an hour to the nest, and in some cases the animal matter counts up into ounces instead of grains, according to the demands of the young birds for food.

In watching the work done by the warbling vireo, bush-tit, and the goldfinches in picking the limbs and branches clean of spiders, larvæ, and scale we should realize that the work goes on the year round. Kinglets, juncos, and warblers can be seen any day during the winter cleaning the bare branches of scale. The little mouse-like bush-tit, of plain gray color, moves in large flocks among the trees, feeding industriously on the bark lice, spiders, and scales. Stomachs that have been examined at the Biological Survey of the Department of Agriculture contained the black scale (*Lecanium oleæ*) from the California olive groves. (See Yearbook for 1900, p. 296, "How Birds Affect the Orchard," by F. E. L. Beal, B.S., Department of Agriculture, Washington, D. C.)

Some birds found in our orchards, as the California brown towhee, black-headed grosbeak, Brewer's blackbird, and Bullock's oriole, are charged with the destruction of the fruit more or less in some localities—a fact in common with our insectivorous birds, such as the small thrushes. This could to a certain degree be remedied by the planting of a few trees of wild cherry, elderberry, or mulberry throughout the orchard or along the fence lines, as all birds prefer wild fruit to domestic, when obtainable. This will be noted where there are wild vines or berry-producing shrubs and trees. I have often watched the thrushes, robins, and even some of the smaller flycatchers feeding on the elder, wild holly, or madrone fruits.

Every few years there comes information relative to the vast numbers of some bird sweeping down on the orchards, causing sometimes great damage to crops. These depredations in many instances are in isolated glens or on hill-slopes, particularly those adjacent to wooded tracts. The early fruits are always tempting morsels to the birds, in addition to their regular diet. In years of drought or late frosts the wild fruits will oftimes be less abundant than the domestic, and then the birds are at their worst on crops. Another cause is the late continuous storms in the tracks of migrating birds, particularly of northern or mountain-breeding species, which will cause a change in movements and the birds to tarry, especially if there be plenty of ripe fruit in the locality.

A case that occurred some years ago was that of the Louisiana tanager, which made its appearance first at Pasadena during May, 1896. They came by thousands, to the great loss of the cherry-growers, one orchardist not getting enough out of his crop to pay for the powder and shot used in trying to rid his orchard of them. Three thousand tanagers were counted on one piece of land. Ten days later I noted them around Haywards for two weeks, they being present in great numbers in the small outlying tracts near the foothills. From that year to the present time they have only been seen in a few single instances. Another case worth mentioning, as it has caused a great deal of discussion on the question of bird protection, is the appearance of robins in the Santa Clara olive orchards. As to whether or not the robins will keep up their record as each season opens remains to be seen.

Where there is a necessary food-supply spread over the country and natural conditions prevail, there is, as a rule, no great movement of birds toward the cultivated areas. When Nature changes any of her food-supply fields it also has the tendency to change the habits of the fauna inhabiting the region, and sometimes man's crops must suffer. Note the influx of great bands of wild pigeons driven from their snow-covered summer home to southern climes last spring. This came about seeding-time around the bay, and the farmers were up in arms, causing the pigeons to be shot by thousands. A four-horse wagon could have been loaded in one field below Alvarado, Alameda County.

All the woodpeckers (*Picidæ*) are valuable tenants of the orchard, excepting, perhaps, the red-breasted sapsucker, the only variety of this group found along the coast region of California, it being only a winter visitant from the high mountains. They will be found about the apple, pear, and orange trees, pecking a series of holes encircling the trunk or limbs, as the case may be. They seem to feed on the inner bark and the sap which collects in the holes. Among the nut-growers complaint is made of some woodpeckers (notably the California and the Lewis) damaging the nuts; but if carefully inquired into it will be found that larvæ or worms exist in the nuts so pecked. The woodpeckers are great hunters after wood pests, hammering away at the abodes of the grubs and borers. The red-shafted flicker is a fine codling-moth trap, even going into the apples after them, let alone cleaning out the ground around the base of each tree. The peach-growers will find the flickers good friends, if given a chance by removing the earth from about the base of each tree for several inches in the early fall. We have three other species of small woodpeckers, black and white in color, with spotted wings, a stripe down the back, breast plain whitish, with a red patch at the back of the head in the males. They are Cabanis's, Nuttall's, and Gairdner's woodpeckers, Nuttall's having a spotted breast. The former species is twice as large as either of the latter two.

Other useful birds are wrens, titmice, warblers, thrushes, and flycatchers. All of these are wholly insectivorous, and should be protected all the year round by the farmer and fruit-grower, who should recognize in them most able allies in the welfare of the farm.

A MEMBER. Have you got any good points to tell us about the bluejay?

MR. EMERSON. The bluejay has got a bad reputation in this State. We shot three or four hundred last year to make an examination of their food, and found that it is ready to eat anything, from a hen's egg to a prune, at some time of the year. At some other times it is beneficial, on account of the amount of animal matter it consumes. Probably about two fifths of its food is animal matter. But the other part of its diet is against the bird.

A MEMBER. Have you made any examination of the food eaten by the king-bird and mocking-bird?

MR. EMERSON. The king-bird is a true flycatcher. They will hover over the stands of bees and feed more or less during the whole day. It has been discovered, however, that they only eat the dead bees.

A MEMBER. Do you know of any birds that will feed on any of the young fruit buds?

MR. EMERSON. The sparrows and linnets will feed on the fruit buds early in the spring. Sometimes when they feed on prune buds I think it is a benefit, for often the prunes need thinning out.

Upon motion, the paper by Mr. Emerson was received and placed on file.

RESOLUTIONS OF THANKS.

MR. AIKEN. The Committee on Resolutions wish to present the following:

We, the fruit-growers of California, desire to show our gratitude to the State Board of Horticulture for this feast of knowledge it has prepared for us, and the invitation it has extended to us to visit San Francisco, where we have learned so much of interest.

I move that the thanks of the fruit-growers be extended to the State Board of Horticulture and its officers for the interesting programme that has been presented, and to all who have taken part in it. In speaking of that, I think I had better, owing to the delicacy of the position, as I refer to the officers now in the chair, present the resolution to the Convention. All in favor of extending to the Board the thanks that are offered, say "I."

Carried unanimously.

MR. AIKEN. I further wish to say that the Press has been instrumental in doing great good to the horticultural interests of the State by its fair and able presentation of the subjects coming before us for contemplation, and its great facility of expression and power of condensation have made it possible for our proceedings to be read by a great many people throughout the State. I move that the thanks of this Convention be extended to the Press.

Motion carried unanimously.

MR. STEPHENS. I move that a vote of thanks be extended to the Chairman of this Convention for the dignified and impartial manner in which he has discharged his duties. All in favor of the motion, say "I."

Carried unanimously.

PRESIDENT COOPER. The Convention has my thanks. I appreciate the compliment, and I will say that I extend to the members of the Convention, for their good order and harmony and general good feeling during the entire meeting, my heartfelt thanks.

MR. A. D. PRYAL, of Oakland. I move a vote of thanks to the Vice-President of this Convention—the gentleman who now is before you, who fills a very high position in the Department of Agriculture in the University of California, and whose work is known from ocean to ocean, Professor Wickson.

Motion carried unanimously.

PROFESSOR WICKSON. I return my sincere thanks and deep appreciation of the honor conferred. I would also like to make a motion on my own behalf, that is, by way of recognition of the services that have been rendered in the preparations for this meeting. We recognize that the arrangements have been excellent, but we do not realize the amount of work done in the weeks past preparatory to this Convention. I desire very much that the thanks of this Convention be tendered to Mr. B. N. Rowley, chairman of the Committee on Arrangements, for the excellent preparations he has made for the Convention which we have so thoroughly enjoyed.

Motion carried.

Upon motion, the Convention adjourned *sine die.*

JOHN ISAAC,
Secretary.

ELLWOOD COOPER,
President.

APPENDIX.

CORRESPONDENCE BETWEEN CHAIRMAN OF COMMITTEE ON TRANSPORTATION AND VARIOUS RAILWAY MANAGERS.

The following correspondence passed between Mr. Stephens, as Chairman of the Committee on Transportation, and William Sproule, Freight Traffic Manager of the Southern Pacific, Robert Graham, Manager of the F. G. E. Refrigerator Car Line, and others, and is self-explanatory. It is presented herewith in order that the fruit-growers of the State may have a clear understanding of the points involved in the matter at issue between themselves, the railroads, and the refrigerator companies:

Letter from William Sproule.

Southern Pacific Company,
San Francisco, Cal., May 21, 1901.

Mr. R. D. Stephens,
Chairman Transportation Committee, Fruit Growers and Shippers,
Sacramento, Cal.:

Dear Sir:

DECIDUOUS FRUIT TRAFFIC.

Referring to the memorial from the fruit-growers of California to the transportation companies through committee of fruit-growers, of which you are the chairman, and copy of which was duly furnished this office.

I beg to say that we have had extended correspondence with our connections, looking to a time-schedule on deciduous fruit from Northern California, during the season now opening, that would be as far as feasible in line with the wishes of the fruit-growers.

As expressed to you when I had the pleasure of appearing before the convention at its session in this city in December last, it is the desire of this company to do its share in fostering the fruit industry, and lend it our influence in giving it satisfactory transportation.

Am now able to say to you accordingly that it is the intention of this company to run trainloads of fresh fruit from Sacramento to Ogden, within 60 hours, provided, if there is but one train, it be ready for departure from Sacramento not later than 12 o'clock midnight; if two or three trainloads, it will be necessary that the first and second be ready to go out at earlier hours, say at 10 and 11, respectively.

The Union Pacific and its connections have authorized us to say that their time from Ogden to Chicago will approximate 84 hours for shipments thus delivered them in trainload lots, of which 24 hours will be consumed from Council Bluffs to Chicago.

You will observe that this will bring the fruit into Chicago in the early morning hours; as a shipment, for example, which leaves Sacramento on Monday midnight, would arrive in Chicago on the morning of the following Monday—this, too, bearing in mind the two hours difference in time owing to meridian.

If, when shipments begin in quantity so as to make up trainloads, shippers will so arrange their forwardings as to give the whole trainload to one connection through to

Chicago, believe you will find results justify the effort. This can be done without giving one line an undue proportion of the business, by alternating the lines over which the trains would move; but all notify us that unless they can get the fruit in trainloads, they can not make the schedule called for. It will make no difference in our time up to Ogden whether the fruit is there delivered to the Union Pacific or to the Rio Grande Western.

East of Ogden the Rio Grande-Pueblo route, recognizing the conditions under which the traffic moves, will aim to meet the time of the Council Bluffs route indicated in the foregoing.

Shipments for St. Paul and Minneapolis on the one hand, and St. Louis on the other, will be handled from point of divergence on the scheduled trains of the line handling the fruit from the Missouri River.

East of Chicago lines will handle as heretofore, the Erie Railroad Company notifying us that their high-class freight train, which carries the fruit, leaves Chicago in the afternoon, but reaches New York on or about 4:30 A. M. third morning, Philadelphia 6:30 A. M. third morning, Boston 4 A. M. fourth morning out from Chicago.

You are aware that the standard for fast trains carrying perishable freight from Chicago to New York is about sixty hours. Lines east of Chicago point out that to speed up their trains in this business would not mend matters, as the fruit would arrive either in the afternoon or the early night hours prior to present arrival, and from either the shippers would derive no benefit as compared with present deliveries; further than this, the way is not clear to handling California fruit on faster schedule time than the perishable freight local to their own lines.

With reference to the minimum load of green fruit per car, you have already been notified by the agent of the Transcontinental Freight Bureau that the lines have decided to reduce this minimum from 26,000 to 24,000 pounds per car, which I am gratified to hereby confirm, this concession being made to meet the views your memorial sets forth.

Trust that you will concur that the foregoing indicates that the expressions given your Convention of intention to go into this matter carefully and endeavor to meet the needs of the fruit-growers as expressed in that Convention, have not been lost sight of, but, on the contrary, are being fulfilled. We trust that the results during the season about to open will bring profit to the fruit-growers and renewed friendly relations with the carriers.

Will you kindly acknowledge receipt?

Yours truly,

(Signed:) WILLIAM SPROULE.

R. D. Stephens to Robert Graham.

SACRAMENTO, November 20, 1901.

MR. ROBERT GRAHAM,
Mgr. F. G. E. Ref. Car Line,
Sacramento, Cal.:

DEAR SIR: As the question of cost for refrigeration is one of great importance to the fruit-growers of the State, and materially affects their interests, I, as chairman of their Committee on Transportation, will ask you whether, for the season of 1902, it is probable that there will be a reduction from the charges for refrigeration made in 1901, for the transportation of California green deciduous fruit to Eastern markets, by the company you have the honor to represent.

I desire information on this subject so that I will be able to present it to the Fruit-Growers' Convention, which is called to meet in San Francisco on December 3, 1901.

Yours respectfully,

(Signed:) R. D. STEPHENS,
Chairman Cal. F. G. Transportation Committee.

Answer of Robert Graham to R. D. Stephens.

SACRAMENTO, CAL., November 21, 1901.

R. D. STEPHENS, ESQ.,
Chairman Cal. F. G. Transportation Committee,
Sacramento, Cal.:

DEAR SIR: Your esteemed favor of November 20th received, and in reply beg leave to state that the tariff in effect during 1901 for refrigeration charges on green fruit from California will, as far as I know, be the same for the season of 1902, the rates being as low as it is possible to make them considering cost of ice, etc.

In this connection I beg leave to remind you of the enormous reduction which has been made since the inception of the Fruit-Growers' Express in 1895, the rates now being little more than one half, to some points, what they were then; the old rate to New York being $175; present rate, $100; old rate to Boston, $200; present rate, $105.

I note that the meeting of the Fruit-Growers' Convention takes place on December 3d in San Francisco, and feel sure that congratulations will be in order for the excellent season the fruit-growers of California have just experienced.

I beg leave to ask that you will tender to the members of the Convention the thanks of the Armour Car Lines for their patronage, and the best wishes of the company I represent for their future welfare.

Very respectfully yours,

ROBT. GRAHAM,
Manager.

Letter of C. B. Dewees to R. D. Stephens.

CONTINENTAL FRUIT EXPRESS,
OPERATING C. F. X. VENTILATOR-REFRIGERATOR CARS,

SACRAMENTO, CAL., November 23, 1901.

MR. R. D. STEPHENS,
Chairman Calif. F. G. Transportation Committee,
Sacramento, Cal.:

DEAR SIR: I have your valued favor of the 20th inst. in regard to the probable rates that will be charged for refrigeration during the season 1902.

It is not probable that there will be a further reduction in our charges for refrigeration next season. As you are aware, a material reduction has been made in refrigeration charges this season as compared with previous years, and it is not likely that a further reduction can be made in the present reduced rates, bearing in mind all conditions now prevailing.

Yours very truly,

(Signed:) C. B. DEWEES,
Manager.

R. D. Stephens's Reply to Mr. Graham.

SACRAMENTO, CAL., November 27, 1901.

MR. ROBERT GRAHAM,
Mgr. F. G. E. Ref. Car Line,
Sacramento, Cal.:

DEAR SIR: I shall have to ask pardon for delaying answer to yours of the 21st instant, and plead in mitigation that I was absent from the city when it arrived.

I will say in reply that your statement that "the enormous reduction" that has been made in refrigeration charges, etc., has no more bearing on the present and the future than the reductions that have been made in freight rates for green fruit in times past, when it cost $1,000 per car for a ten-ton minimum weight car, then reduced to $800, and then to $600, and again and again, until the present rate of $360 for a 24,000 minimum weight car to New York prevails, which amounts to a net reduction of 66⅔ per cent.

I will now give you some of the reasons why I feel justified in interrogating you upon the subject of refrigeration charges, and the possibility of a reduction from the present rate being made for next season.

When the F. G. E. Company's cars were accepted by the Porter Bros. Company, the rate from Sacramento to New York was $130 per car, and it was then understood that the shipper might put in as much weight as he pleased, without extra charge for refrigeration.

At this time there was strong competition, which necessitated the employment of special representatives who were sent into the various fruit districts to solicit business.

Now there is no competition.

The Armour lines have a monopoly of the fruit-carrying business from California to Eastern markets.

No longer is there need to employ agents to solicit business for its cars, for the shipper has to use them or none. *These facts should, and no doubt do, make an "enormous reduction" in the expense of the company.*

There is another reason that it seems would justify the belief that a reduction of no small magnitude could be made in the rates now prevailing, and still leave an enormous profit to the Armour Company, and this is the fact that the companies now under its control charged some years since but a small proportion of its present California rates for Oregon and Washington fruit shipments, and it is reasonable to assume that the refrigerator lines then doing business in these two States were doing it at a fair and reasonable profit.

In support of the correctness of this assumption, I offer the fact that the refrigerator cars are still doing business in these localities at a $35 rate to New York and other places.

You assume that the season of 1901 has been a very prosperous one for the California fruit-grower.

I wish I could join you in this assumption, but I can not do so so far as Eastern shipments are concerned, for some of them have brought "red ink" returns. That is, the price that they brought did not pay the transportation and commission charges, and others brought but little more; while many others failed to bring a profit to the growers when all costs are taken into consideration, including production, picking, packing, materials used—such as crates, boxes, nails, paper, etc.—taxes, together with a fair interest on the capital invested, and only equal to that which they have to pay upon the mortgaged indebtedness, if they have any, and the rule is that they have.

It is true that some growers have made money this year, but it is one year in ten, since 1891, that but few of them have been able to do so by shipping East; therefore, it would be unreasonable, and certainly it would not promote the horticultural interests of the State, to establish as a basis, from which to fix rates for refrigeration, the maximum prices received for shipments.

It frequently occurs that a grower receives what might be termed enormous prices for one shipment, and losing prices for ten others.

In conclusion, I will say, that there is no guarantee that prices that will bring a profit to the growers will prevail next year, nor for years thereafter, but, on the contrary, it is not at all improbable, and certainly not impossible, that conditions may prevail that will result disastrously to many of the growers; therefore, every care and precaution should be taken to prevent such a result, and this is why I am appealing to you now, hoping that you will see your way clear to recommend to your company a material reduction in its present charges for refrigeration.

Respectfully yours,

R. D. STEPHENS,
Chairman F. G. Transportation Committee.

R. D. Stephens to William Sproule.

San Francisco, December 4, 1901.

Mr. William Sproule,
F. T. M., S. P. Co., City:

Dear Sir: In a communication addressed to me bearing date of May 21, 1901, you stated that arrangements had been perfected with the various railway companies that were interested in carrying California green deciduous fruit shipments to Eastern markets by which a very much improved service could and would be given to the fruit growers and shippers of the State.

I regret to say that all that was promised was not given. At the beginning of the season when a sufficient number of carloads were offered daily to make up special trains there was a very material improvement made in the service given, but later in the season the service was not so good and lower prices were obtained by our growers for their products that were shipped to and sold in Eastern markets.

As fast time and otherwise good service in the transportation of our green fruit shipments are of the utmost importance to the fruit-growers of the State, I will ask why the promises made by the Southern Pacific Company and its connections were not fully carried out, and also what will be done for them in this regard for the season 1902. I assure you that the fruit-growers appreciate the efforts made by the railroad to give them an improved service for the season just passed, and earnestly pray that all the promises made by them for the season 1901 will be fully carried out in 1902.

Yours respectfully,

R. D. STEPHENS,
Chairman Fruit-Growers' Committee
on Transportation.

Reply of Mr. Sproule.

San Francisco, December 4, 1901.

Mr. R. D. Stephens,
Chairman Fruit-Growers' Committee on Transportation,
Pioneer Hall, San Francisco:

My dear Sir:

DECIDUOUS FRUIT SERVICE.

Acknowledging your letter of even date, I beg to say that in accordance with my letter to you of May 21st last we ran eighty fruit trains from Sacramento to Ogden within the time specified for trainloads, and the other trains (with the exception of some four or five which were delayed by wash-out) approximated the schedule; but the delayed fruit was mostly that which was not delivered us so that it could go forward in trainloads in accordance with the terms of the letter you refer to. There was a temporary derangement of the service while the Epworth League moved to and from California—several thousands in number, as you may remember—but we notified shippers of this in advance. At the same time we did not relax our efforts to give the fruit quick time, and the schedule was over-run but slightly.

The line west of Ogden handled the fruit this season under conditions of serious disadvantage—which conditions, however, were shared by all the lines in the United States to a greater or less degree, and whatever the freight, or whatever the route it took, the condition was one that would equally have to be contended against, to wit, our orders for locomotives have been filled very tardily, the industrial strikes (particularly pertaining to the steel trade in the Eastern States) so retarding those lines of construction in which steel entered that it was impossible for locomotive shops to turn out engines fast enough to fill requisitions. In anticipation of the season's business the first thing done this year was to put in requisitions for over one hundred locomotives, of which, up to beginning of November, we had received just twenty all told, notwithstanding that all pressure was brought to bear to get them on our rails. This large order for locomotives was in part to take care of the fruit business. So much for the service over our own rails.

The lines east of us were confronted with like conditions, and that, too, in the busiest season the United States has ever had. There was a decided effort made by all to segregate the California deciduous fruit traffic and give it preferred service. I think the claim is justified that the service is better than at any previous season, unless those special limited fruit trains which were experimented with some years since on a 120-hour schedule Sacramento to Chicago be alone excepted. To whatever extent the service was not up to standard toward the end of the season arose from the shortage of power on the part of all the railroads, and further from the fruit not being delivered us so that it could be handled in trainloads—particularly owing to splitting of the trains at Ogden, to which the letter of May 21st last to you made special reference. That the roads took decisive interest in the business was shown by the fact that we were able at all times to supply refrigerators for fruit, to do which it became necessary to give the returning cars fast service and not hold them for loads. The percentage consequently that returned loaded with any kind of freight was merely nominal, and on the contrary the empties were handled in preferred trains on time that would ordinarily not be given to any other than perishable fast freight.

It is a pleasing coincidence that improvement in the markets for California fresh fruit and improvement in the service have been manifested this season, and can only say that we rejoice with the growers in this condition, and in sympathy with the effort to maintain profitable markets will aim to secure reasonable and prompt transportation for the fruit during the coming season, both by maintaining the standard of our own efficiency and not relaxing our efforts with connecting lines.

Very truly yours,

(Signed:) WM. SPROULE.

Alden Anderson to R. D. Stephens.

THE ALDEN ANDERSON FRUIT COMPANY,
SHIPPERS OF ALMONDS, GREEN AND DRIED FRUITS
SUISUN, SOLANO CO., CAL., January 2, 1902.

HON. R. D. STEPHENS, *Sacramento, Cal.:*

DEAR SIR: I herewith return to you report of committee, but without my signature. I have no doubt but that all the statements made therein are absolutely correct, but I dislike to sign same in the absence of knowledge on my part. This refers particularly to the relative cost of refrigerator charges.

I have been such a crank on the subject of transportation, and have thought that if we could fight and win one battle at a time it would be better than to divide our strength along different lines. There is so much to be done that I will never say a word or do anything that would retard progress in any direction.

I have recently been very busy, but intend, as soon as I get time, to look up for myself the comparative charges of refrigeration from all fruit districts.

Yours very truly,

(Signed:) ALDEN ANDERSON.

Mr. Stephens's Reply to Mr. Anderson.

SACRAMENTO, CAL., January 4, 1902.

HON. ALDEN ANDERSON, *Suisun, Cal.:*

DEAR SIR: Yours of the 2d instant received, and, in reply, will say that all the other members of the committee regret that you do not now see your way clear to join them in their efforts to obtain the relief so necessary to make fruit-growing in California profitable.

The success of these efforts would do much to secure an equitable distribution of the profits among all parties interested. We feel thankful, however, for your indorsement of the truthfulness of the statements made in our report when you say in speaking of the report: "I have no doubt but that all the statements made therein are absolutely correct."

There should be a reduction of at least seventy per cent made in the existing charges for refrigeration, which would still leave a handsome profit for the car lines, and a much larger one than would be then received by the average fruit-grower for the capital and labor he has invested. Such a reduction would accomplish more for the fruit interests of the State than twice the amount in reduction in the freight rates, for the reason that it *would take from the refrigerator lines the power to give heavy rebates to a favored few, which system carries with it the power to control the distribution and marketing of our fruit products.*

So long as the present rates for refrigeration prevail, the fruit-growers of California will see no competition between buyers, for the reason that no man or firm can hope to successfully compete with those who may be favored under the rebate system.

Hoping that you will soon see your way clear to join the other members of the committee in their efforts to emancipate the fruit-growers of California, I remain,

Very truly yours,

(Signed:) R. D. STEPHENS,
Chairman Fruit-Growers' Transportation Committee.

William Sproule to R. D. Stephens.

SOUTHERN PACIFIC COMPANY—GENERAL FREIGHT DEPARTMENT,
SAN FRANCISCO, CAL., January 3, 1902.

MR. R. D. STEPHENS,
Chairman Fruit-Growers' Transportation Committee,
Sacramento, Cal.:

DEAR SIR:

TRANSPORTATION GREEN FRUITS EAST-BOUND.

I beg to acknowledge receipt in due course of your valued favor of the 23d ult., and thank you for copy of report of action taken by the fruit-growers of California at annual convention December 3-6, 1901, in regard to transportation of green fruits to Eastern markets, enclosed therewith.

You can rest assured this traffic will have the careful attention of this Company.

Yours truly,

(Signed:) WM. SPROULE.

W. A. Gardner to R. D. Stephens.

CHICAGO & NORTHWESTERN R'Y CO.,
OFFICE OF THE GENERAL MANAGER,
CHICAGO, December 26, 1901.

MR. R. D. STEPHENS,
Chairman Fruit-Growers' Association Committee,
Sacramento, Cal.:

DEAR SIR: We wish to thank you for your letter of December 23d, enclosing reports of Fruit-Growers' Association.

Yours truly,

(Signed:) W. A. GARDNER.

G. H. Crosby to R. D. Stephens.

BURLINGTON & MISSOURI RIVER RAILROAD IN NEBRASKA,
GENERAL FREIGHT DEPARTMENT,
OMAHA, December 26, 1901.

MR. R. D. STEPHENS,
Chairman Fruit-Growers' Transportation Committee,
Sacramento, Cal.:

DEAR SIR: I have your letter of the 23d, enclosing report of action taken at Fruit-Growers' meeting held in San Francisco, December 3d to 6th. I have carefully noted the same. I will say that I think the carriers are using every possible effort to improve the service in the matter of time, and I believe with the greater experience we are having in the matter of handling this traffic, that we will be able to meet the views of the growers.

So far as contracts with private car lines are concerned, I would say that this company has none. We handle all kinds of cars without having any special contract with any line.

Yours truly,
(Signed:) GEORGE H. CROSBY.

C. Clifford to R. D. Stephens.

UNION PACIFIC RAILROAD COMPANY—TRAFFIC DEPARTMENT,
SAN FRANCISCO, January 7, 1902.

MR. R. D. STEPHENS,
Chairman Fruit-Growers' Transportation Committee,
Sacramento, Cal.:

DEAR SIR: Am pleased to acknowledge receipt of your letter of the 2d inst., together with copy of the recommendations which were made by your Transportation Committee at your San Francisco, December, 1901, meeting, also a copy of Mr. Sproule's letter of May 21st, 1901.

Of course you know that the Union Pacific has always shown a disposition to assist the fruit-growers to the fullest extent possible, and I am very glad, indeed, to be able to refer all papers, together with your letter of January 2d, to our Freight Traffic Manager, Mr. J. A. Munroe.

Yours truly,
(Signed:) C. CLIFFORD.

E. P. Ripley to R. D. Stephens.

THE ATCHISON, TOPEKA & SANTA FÉ RAILWAY SYSTEM,
PRESIDENT'S OFFICE,
CHICAGO, January 2, 1902.

MR. R. D. STEPHENS,
Chairman Fruit-Growers' Transportation Committee,
Sacramento, Cal.:

DEAR SIR: I have yours of the 28th ult., enclosing report of action taken by the fruit-growers of California at their State Convention at San Francisco, December 3–6, and in reply beg to advise you:

First—That existing contracts with private owners of refrigerator cars will expire before the citrus fruit season of next year begins, and will not be renewed, so far as this company is concerned, as by that time it will own a sufficient number of cars to transact its business direct with shippers without the intervention of a third party.

Second—That only a small part of the business done by this company requires refrigeration, as we are not largely engaged in carrying deciduous fruit, but that it will not be our policy to exact a profit from shippers as to refrigeration charges.

As to time in transit, it is probable that your committee and its constituents do not realize how rapidly transportation costs increase when high speed is called for and given, nor what obstacles are encountered by the transcontinental lines in attempting to make the very fast time requested by your committee. While I do not attempt to pass on the reasonableness of the six-day time to Chicago and eight days to New York on deciduous fruits from Sacramento, I am of the opinion that six days to Missouri River points and eight days to Chicago is quite as fast time as we can fairly afford to make from San Bernardino on citrus fruit, and that this time, *made regularly*, should satisfy all reasonable requirements. Indeed, I think that absolute regularity is more essential than fast time as to all the fruit business of California. We are exerting all our powers and are spending very large sums of money in the endeavor to accomplish this *regular* service, but few people outside of the carriers themselves realize the difficulty of keeping trains on time over a 2500-mile stretch, which embraces nearly all possible climatic and geographical variations. We are striving to make our freight service regular and reliable, and sparing no pains or expense. It is our desire to make the fruit industry in California profitable and satisfactory to the grower, in order that it may be the same for the carrier. As previously stated, we expect to meet the views of your committee next season as to the elimination of private cars and the reduction of refrigeration charges. We hope also to make good, and above all, *regular*, time, but we are not prepared to promise a reduction in schedule time at the present.

Yours truly,

(Signed:) E. P. RIPLEY.

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